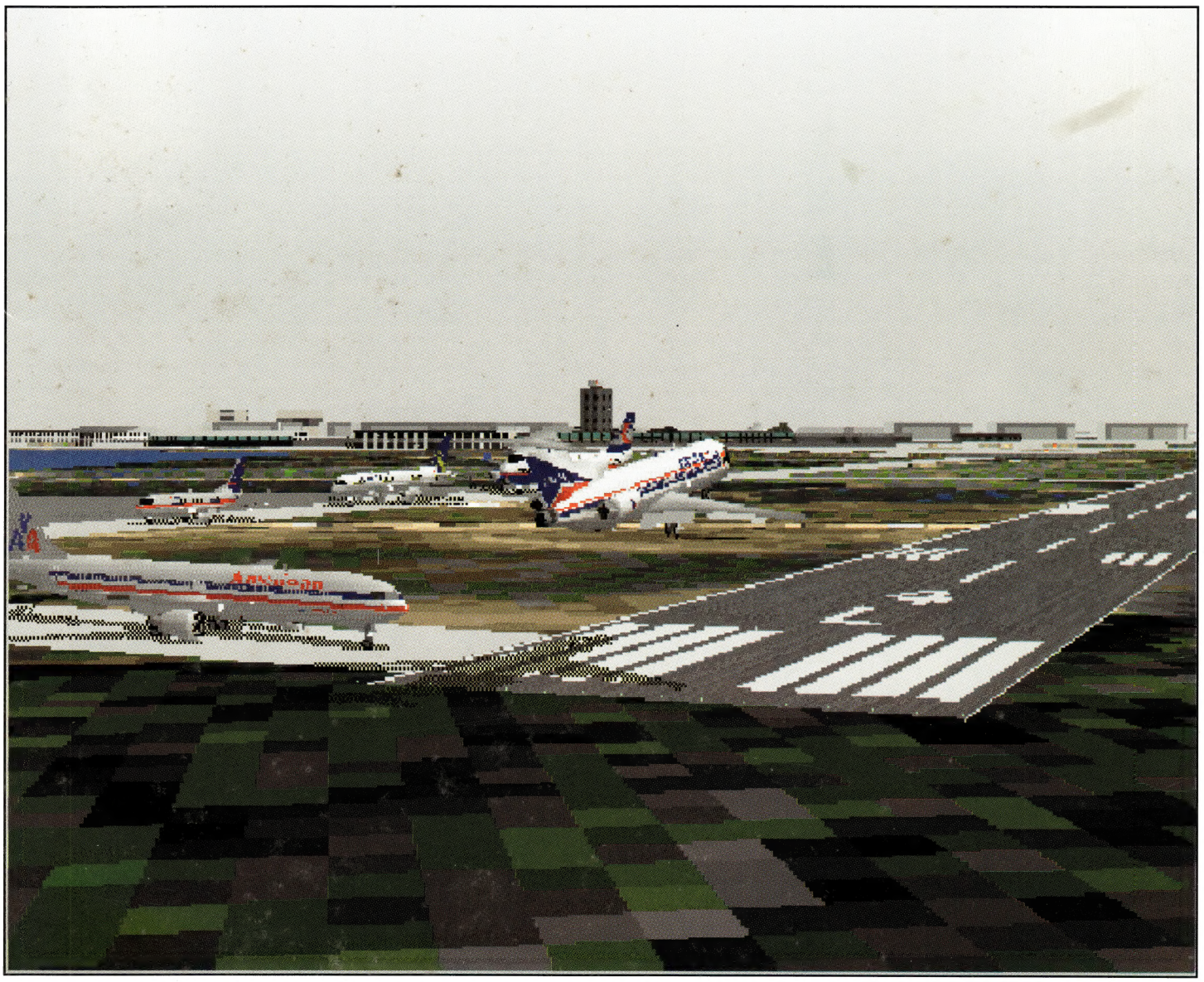
Vol. 4, No. 1

MicroWINGS Magazine

OFFICIAL MAGAZINE OF THE INTERNATIONAL ASSOCIATION FOR AEROSPACE SIMULATIONS



Review of =Vectors=
Review of Hong Kong
TekMate's VSA Hangars
Expanding Flight Shop's ATC
Flight School: Adv. Maneuvers

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from the editor

I hope that all of our members had a joyous holiday season. Now it is time to focus on 1996, a year that may very well be called the year of the third party publishers. In this issue alone, we have reviews of four products from four independent third party publishers! More products have been announced and are due out this year from third party publishers.

With Microsoft acquiring BAO, Sierra acquiring subLOGIC, and Jeppesen acquiring MDM Systems, the industry appears to be consolidating. For more reflections on this trend, read BAO's company column in this issue.

As the industry changes, MicroWINGS will be there. You may have noticed that our BBS column has been renamed to Flight Simulation On-line. This is to coincide with the re-focusing of the column to cover all aspects of on-line usage by flight simulation enthusiasts, including the ever expanding Internet.

Missing in this issue is, a favorite of all MicroWINGS readers, Charles Gulick's Crosswinds. Charles has been under the weather but is soaring back to flying condition and will be here once again in the next issue.

Last issue's Expanding ATC's Features was very popular, and it is back again in this issue adding more Center Chatter, Ground Chatter, and Takeoff/Landing Checklists to the repertoire of Flight Shop's ATC Workshop capabilities.

Feel like getting out for a really long flight? Then use WinPlanner to plan your flight to Hong Kong using the features of Vectors in a TekMate Flight Shop airplane. All four products are reviewed in this issue. While crossing Europe, on your way to Hong Kong, see what the folks at Lago are up to by reading their interview conducted by our Flight Deck columnist, Hans Kiener.

I am proud to announce that MicroWINGS is fortunate to have two new commercial members with this issue. Jeppesen Sanderson produces high quality navigation charts, training materials, and pilot supplies. Jeppesen stepped into flight simulations in a big way with their acquisition of MDM Systems' line of PC-based IFR simulators. Flight Link produces top of the line yokes, control panels, throttles, and rudder pedals for use with most of the popular flight simulations available. Both of these new members are on the web and accessible from the MicroWINGS web site's Commercial Member directory section. Stop by and welcome them aboard! *[MW✈]*

Robert MacKay

MicroWINGS Magazine

About the cover:

Michael Fisher has come up with a unique way to create the most stunning screen shots ever 'taken' of Microsoft's Flight Simulator (using Flight Shop to provide the new aircraft). For more examples of his highly talented ability, see his review of TekMate's VSA Hangars in this issue.

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See masthead on page 3 for further information regarding MicroWINGS Magazine.

MicroWINGS Drawing Winners!

The Jan/Feb Drawing Winners Are:

R.D. Patrick
of Santa Anna, TX
R.D. has *PILOT's Hong Kong scenery*
on its way to him.
Congratulations!

Jerry Kelsey
of Prospect, KY
Jerry has BAO's
Flight Simulator Flight Shop CD
on its way to him.
Congratulations!

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NOTAM'S

(Notice to Airmen)

News Bits From Around The World

Virtual Skunkworks Releases Their First Issue

Tekmate has released the first issue of the Virtual Skunk Workshop (VSW), the perfect companion to Flight Sim Flight Shop's Aircraft Factory. If you want to sharpen up your design techniques, learn more about the commands and capabilities of Aircraft Factory, and create static scenery objects for FS5 then you'll be interested in trying out VSW. VSW is software that installs on your hard drive and consists of a Viewer that allows you to peruse the many articles, workshops, and tutorials on design techniques for Aircraft Factory in Window's Help File Format. This is the same format Aircraft Factory uses for its tutorials and on-line help, so you can also view and take these new tutorials directly from Aircraft Factory. New Aircraft including source code accompany the technical articles. Static Objects including source code are provided for use with the Prefab Utility (A full version of the Prefab Utility is provided to allow you to populate your FS5 world with static objects, including those that you design yourself). For more information, visit the TekMate web site at http://rampages.onramp.net/~tekmate, or call them at the number listed in the commercial member directory.

TekMate Offers Members Discount

TekMate has announced that they will be offering MicroWINGS members a discount on VSW (see above) single issues and annual subscriptions. Members get $2.00 US off the single issue price, and $8 off the annual (4 issues) price. All members need to do is provide TekMate with their valid MicroWINGS ID number.

Gulick Gives Members Free DFW Vectors

Charles Gulick has started shipping his Vectors (see the review of it in this issue) on-board flight computer enhancement for Flight Simulator (requires Flight Shop). As a special benefit to MicroWINGS members, Gulick is including (free of charge) the DFW module of Vectors for flying around in the MW's Dallas/Ft. Worth scenery add-on. The DFW module of Vectors is only included free of charge to MicroWINGS members. To order Vectors send $19 (includes S&H) to Charles Gulick, 2810-C East Ashley Drive, West Palm Beach, Florida, 33415 USA. Be sure to include your MW ID #.

CH Shipping 2 Rudder Pedal Solutions

CH Products is now shipping two different rudder pedal solutions for flight simulation enthusiasts. The CH Pedals are sturdy foot pedals with gas-pedal style rudder action. The CH Pro-Pedals are similar to the standard CH Pedals, but spaced a bit further apart and provide forward & back sliding style rudder action in addition to the gas-pedal style action. Both pedal solutions come with a Y connector cable to allow the simultaneous use of a joystick/yoke and the rudder pedals, and using just one joystick connector port.

Jeppesen WEB Site Opens

Jeppesen Sanderson has joined MicroWINGS as a commercial member and has setup a world wide web site. Jeppesen recently acquired MDM Systems and now published the highly acclaimed FS-200 flight simulator. The URL for the web site is http://www.jeppesen.com. You can also reach their web site from the links provided on the MicroWINGS web site.

Mac and Win95 Flight Unlimited

Looking Glass Technologies is gearing up for the release of Mac and Windows '95 versions of their popular Flight Unlimited aerobatic flight simulator. The new versions are expected to ship during the first quarter of this year.

MWFSWAV.ZIP Now Available On-Line

A new file is available on the MicroWINGS web site (http://www.microwings.com) and major on-line services called MWFSWAV.ZIP. This file adds nearly 40 new airline callsigns (with matching .WAV files) to Flight Shop's ATC Workshop. Many international airlines as well as the more popular virtual airlines are included. The file also gives Flight Shop the ability to speak the phrase 'Heavy' after your callsign when flying large aircraft such as the 747, MD-11, etc. (ex. "American 267 Heavy, Contact Departure on 118.80, Good day.").

Thrustmaster Files Patent Infringement Suit Against WICO

Thrustmaster filed a patent infringement lawsuit against the parent company of Suncom Technologies, WICO Corporation. In its complaint, Thrustmaster asserts that Suncom is infringing Thrustmaster's patent rights concerning reconfigurable game and simulation controllers.The patented technology was invented to ease the reconfiguration task for computer game enthusiasts wishing to change the settings on their joysticks. Also in the complaint, Thrustmaster has requested that the court enjoin Suncom from making or selling any joysticks corresponding to the patented technology and is seeking damages.

Fly-It Simulators Now Shipping World-Wide

Fly-It Simulators is now shipping their General Aviation Control Panel world wide. The panels are being shipped to Switzerland, Belgium, France, Portugal, New Zealand, Japan, Netherlands, Saudi Arabia, Mexico, UK, Israel, Denmark, Germany, Puerto Rico, and all over the USA and Canada. The majority of these orders are coming from MicroWINGS members. Fly-It had been running a large backlog of orders with long lead-times. The panels have been converted to printed circuit boards, cutting the production time by a factor of ten while increasing the quality of the product. As of February 15th, Fly-It expects to be caught up on all orders and shipping from stock.

Fly-It Simulators Supports Flight Shop Features

Fly-It Simulators has announced that their General Aviation Control Panels will now support Flight Shop communication requirements. The buttons on the yoke will kay the mike to make radio contact with the ATC facilities and also request a repeat of the last ATC instruction. When a CH Virtual Pilot Pro is used, all Flight Shop communications will function, using the six buttons available on the yoke.

Flight Simulator Handbook Now In French and Dutch

Jonathan M. Stern, MicroWINGS' instrument flying columnist, has had his recent book, Flight Simulator Handbook, published in two additional languages. The French edition, entitled Flight Simulator Strategies (ISBN: 2-7440-0036-1), is published by Simon & Schuster Macmillan (France) of Paris. The Dutch edition, entitled Flight Simulator 5.1 Handboek (ISBN: 90-395-0295-1), is published by Academic Service of Schoonhoven. The original English language edition was published by the BradyGames imprint of MacMillan Publishing as Flight Simulator Handbook (ISBN: 1-566-86-282-5). Flight Simulator Handbook was reviewed in the Jul/Aug 1995 (V3N4) issue of MicroWINGS Magazine. *[MW✈]*

Review of...

Gulick's =VECTORS=

by Bill Cline

The first time I heard of VECTORS was in the Sep/Oct 1993 issue of MicroWINGS, in Charlie Gulick's "Crosswinds" column. I brought the subject up once or twice with Charlie after that, and got the impression there were other things more pressing for him and the subject was moot. Recently, to my absolute surprise and delight, out of the blue came a message from Charlie asking if I would try out and do a review of VECTORS, a program he has developed for FS5 and Flight Simulator Flight Shop (FSFS). What follows are my impressions.

You park your car at Meigs where your Cessna, Mooney, DC3, or F-18 is parked. Looks like a fine day to go flying, though there is a thin haze on the horizon. Anyway, you are planning on staying VFR in the local area and you can always scoot home in front of any problem weather, right?

Before we take off, let's load up Charlie Gulick's new Vectors "onboard computer", figuring we can check it out this afternoon. Let's give it a try. Select OPTIONS and then 1 - Adventure Factory, and then select =VECTORS= Chicago. OK, all set.

First thing we want to do is create some weather. We press "ctrl+w" and immediately see we have scattered clouds at around 3,000 feet, 12 miles visibility, and wind from the east at 7 knots. Fine. We should be able to stay VFR. (More about this weather creation thing, later)

We've made an uneventful takeoff and are tooling along at 5,000 feet, just enjoying the sights, somewhere northwest of Chicago - daydreaming in the smooth air, feeling on top of the world.

Let's try this weather business again. Hit ctrl+[w] and let's see wha....WHOOPS!

We're in the soup, moderate turbulence and the weather report says visibility on the ground is three miles! Where are we? Where's Meigs? Where is ANY airport? How do we get home? BIG problem!

Maybe so. But let's see if VECTORS can help out. We know we're in the Chicago default area, somewhere generally northwest of Chicago. We want to land at Meigs because my car is there. Good thing ol' Charlie's manual is only two pages long! Let's cut in the autopilot to help hold altitude.

Tune in 0014 in the transponder and hit the keyboard "v". All right! VECTORS says heading to Meigs is 135 degrees and distance 43 miles. Hmmm. I'm further out than I thought. How's the gas? Uh oh! Awfully low...

What's the matter with me? I can't get this thing back into Meigs without some help. I'd better set things up and try to get into O'Hare. Wish I had brought all my charts with me. All I have is this old Terminal Chart for O'Hare.

Lessee, now, VECTORS says O'Hare code on the transponder is 0025... crank that in with my trusty mouse... hit "v" again... Good! ORD is just about on my nose, heading 120 at 15 miles. What was that surface wind? Hit the "w" key for a repeat... wind is 085 at 7K. Better set up for an ILS to 09 left.

I've got to use Deanna NDB as a first fix. Better head for that. Tune in 350 on the ADF. Hit the "n" key and I now know not only the vector to head directly for it, I know how far it is. Now I'm cooking! Be on the ground in no time...

Now you have seen just a little bit of what VECTORS can do. Let's look at the program in more detail.

OTHER FEATURES

Want to ship your plane immediately to another airport in the area? Easy. Simply squawk a code VECTORS gives you and hit Ctrl+g (for Go) and you are instantly transported. None of this searching with the mouse for the World-Airports-(scroll forever...)-find the right scenery area-hit on that-and finally find your airport. And if you try to get to the airport of your choice by using the slew method and you pop out of slew before checking field elevation against the altitude you started with...well, you probably know the consequences. And you do not have to be on the ground when you hit ctrl+g. Do it while in the air and you will find yourself cruising along directly over the airport you selected!

Requesting a vector to an omni-station (VOR) anywhere in the area is easy and a very nice way to get a cross-checked position. Tune both VOR1 and VOR2 to working frequencies, press 1 for VOR1 and read vector and distance. Hit 2 and get the readings for the station tuned on VOR2. Transfer that information to a chart and you have a nice two-position fix. Reset one of the NAV radios to another VOR, hit the numeral key for that VOR, and you can really triangulate a position on the chart!

If a "fix", such as an initial approach fix, or reporting point on a chart is designated as the meeting place for two separate VOR radials, or perhaps a VOR radial and an NDB heading, you can readily see the advantage of Vectors' ability to pin-

Figure VEC.1 - The HUD feature allows panel-less flying

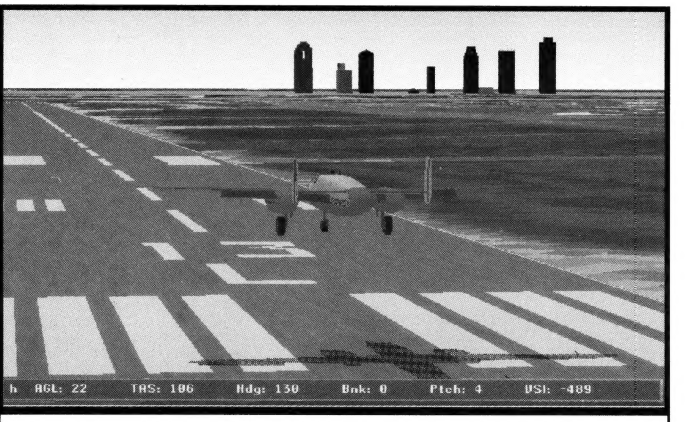

Figure VEC.2 - Spot plane view flying is made easier with the HUD

point that intersection without the need for observing two OBI instruments or an NDB at the same time. Simply tune in one of the stations with Vectors and when that intersecting radial, or heading, is touched, you know you have hit the fix perfectly. (Please see the CLAMY Intersection on the Martha's Vineyard ILS page 240 of the FS Pilots Handbook, for a good example).

In order to request Vectors direct to an airport (as opposed to a VOR or NDB, both of which work worldwide) that destination airport must be in one of the five FS default U.S. areas in the Vectors database—Seattle, San Francisco, Los Angeles, Chicago, or New York (additional databases will be forthcoming). However, you can request vectors to ANY default airport from outside the default areas. The doc file says, "How far airport vectoring is effective has not been established. It appears to work throughout the continental U.S., and also from locations in Europe to the U.S."

For instance, want to fly from London Heathrow to JFK, or perhaps direct from Miami to LAX? Simply enable VECTORS for the proper area, crank in the proper code in the transponder box, then press the "v" key. For LON to JFK, I get 266 degrees and 2820NM. For MIA to LAX, it will be approximately 289 degrees and 2112 miles. Looks right to me! And, as you cruise along, you can make course corrections by simply hitting the "v" key now and then. Great for those long over water trips, or areas for which you have no charts, eh?

OTHER FLIGHT PARAMETERS, ETC.

Checking and setting just about all your flight parameters is a snap with VECTORS. You can (with one keypress):

- o Read altitude (AGL) and ground level (MSL)
- o Read your bank angle
- o Check course (magnetic heading corrected for wind)
- o Read your vertical speed (FPM)
- o Read your TAS and IAS (in knots)
- o Check or set your takeoff, cruise, etc. trim accurately
- o Check your pitch angle
- o Read an on-screen VECTORS menu (while flying!)

Want more? Well, the author has obliged...

HUD FOR FLIGHT SIMULATOR!

With a single keypress, Charlie has provided a "heads-up display", or HUD, which gives the pilot vital flight information in a single message line. This is great for use in full screen flying. I tried this both while flying the FSFS Ultralight and while simulating radio control of the plane. What a thrill! The HUD shows your altitude above ground, true air speed, heading, amount of bank, amount of pitch, and vertical speed.

To get the most enjoyment out of the benefits of the HUD, I suggest (before loading a VECTORS module) you set Maximize Window OFF in the VIEWS/ menu. Hitting the

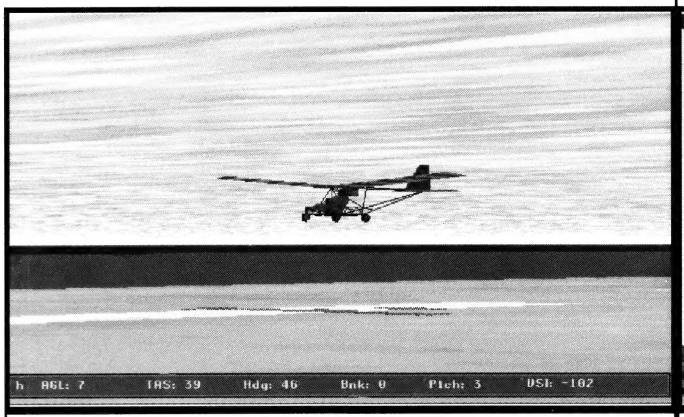

Figure VEC.3 - Practice radio control (R/C) model flying with the U/L

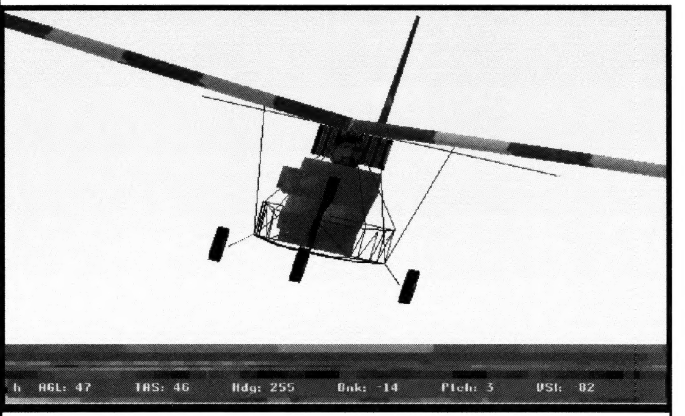

Figure VEC.4 - In Tower view, have the U/L come right at you!

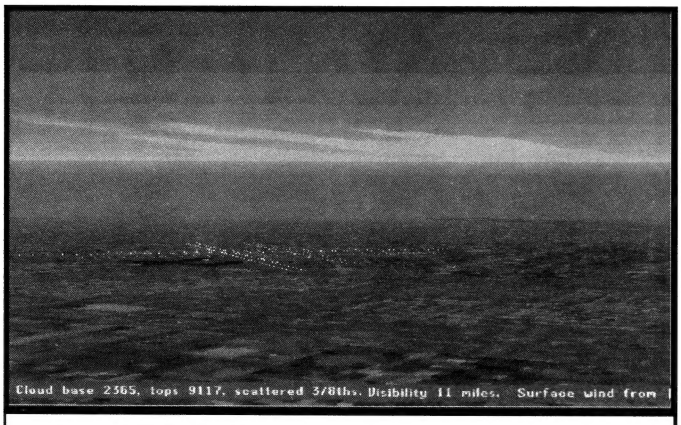

Figure VEC.5 - Get the very latest weather conditions anytime

"Shift+W" key will now give you full screen to all sides. Then load any of the VECTORS and hit "h". Actually, the "heads up" is really not "up" because the message line with the data drops to the bottom of the screen, but it lets the pilot be heads up regarding the outside world. When you wish to go back to the view which has your instrument panel, you simply hit Shift+W again. The HUD will still be on but if you want to turn it off, press the "h" key once more.

While flying in full screen mode, the view is terrific and with the HUD display, you have all you need to keep flying safely and easily. Figure VEC.1 shows a full screen view from the plane. The HUD is constantly and instantly updated as you fly. This allows not only nearly foolproof flying but now you can enjoy both precision flying full screen and watch your aircraft perform as never before possible (as shown in Figure VEC2).

Though the VECTORS readouts on screen are easily viewed, it may be difficult to see the HUD readout in the photos I made for this review. Therefore, I am providing the readouts for each snapshot.

VEC.1: AGL:212 TAS:79 Hdg:295 Bnk:12 Ptch:5 VSI:-505

VEC.2: AGL:22 TAS:106 Hdg:130 Bnk:0 Ptch:4 VSI:-489

When I went into tower view to fly the Ultralight in RC (radio control mode), I was able for the first time, because of the HUD, to take off, fly a pattern, and land with hardly any difficulty. Unfortunately, because of my own over-confidence, old Rush Mueller ran into a building right at the tail end of the landing. You did know that is designer Rush himself in his FSFS Ultralight, didn't you? (See figure VEC.3)

VEC.3: AGL:7 TAS:39 Hdg:46 Bnk:0 Ptch:3 VSI:-102

Another thing you want to try while in RC mode is to have the Ultralight aim straight for you at about 100 feet in the air, fly directly over your head, and experience the smooth change in direction you take as it then flies away from you. Extraordinarily realistic! (See figure VEC.4)

VEC.4: AGL:47 TAS:46 Hdg:255 Bnk:-14 Ptch:3 VSI:-82

And for another real thrill while in full screen viewing, use the HUD while in Bryant Arnett's F-18 Hornet. Screaming along at 700 knots just 250 feet above the ground will give you chills. Switching to the side views while at this speed is quite a thrill, too! I dare you to set up in tower view (RC mode) and have the Hornet on the deck coming straight at you! If you don't duck you're one cool customer! And if you don't crash the Hornet, at least once, you're one hot pilot!

THE WEATHER FEATURE

Although the process of selecting weather is similar to that for most other features of VECTORS, I have elected to give it its own special place in this review. It deserves it and, in my opinion, is one of the most valuable single features of VECTORS. Figure VEC.5 shows a typical VECTORS weather readout, in this case, as follows:

VEC.5: "Cloud base 2365, tops 9117, scattered 3/8ths. Visibility 11 miles. Surface wind from 198 at 7."

The weather changes in FS, along with the report, which scrolls across the message bar, then disappears. Want to see it again? Simply press "w" and the weather report will repeat.

Gulick has managed to decipher the FSFS Adventure machinery sufficiently to permit, at the press of a key, completely variable, instant, and realistic weather that should satisfy everyone. I have pressed the "ctrl+w" keys many, many, many times trying to obtain the same weather conditions that have previously shown up on screen. I don't think it can be done! And, if you decide you want to get back into "clean" air again, simply press the "e" key and you are back in pure VFR weather.

Charlie says, "I have seven different random elements at work in each weather system, so I think it is virtually limitless. Even the altitudes of the clouds varies greatly, which makes each group look different. And no, you're not seeing what I programmed into the weather, except that I programmed in the extent of the randomness. I never know what to expect, and so far I'm really pleased with the results. I have a feeling that I lucked out as I toyed with weather possibilities, and just happened on an ideal group of algorithms."

Another very nice feature of the weather area of Vectors is how you can influence the wind direction! By simply turning your plane to any heading and pressing Ctrl+w, the resultant wind direction created will be within 30 degrees of your aircraft compass heading. With this feature, you can give your self a cross-wind if you wish, or even make any desired runway the "active". Of course, you must remember that you get a change in the cloud and visibility readings with each press of Ctrl+w, but your winds will always be within 30 degrees of your nose heading. Thus, if you don't like the "weather" you get, simply keep pressing Ctrl+w 'til it is to your liking!

I predict that, for those who have VECTORS, the menu keys of WORLD/WEATHER in FS will become the least used items in the FS program. If you get VECTORS for no other reason than for its weather feature, you have made a wise decision.

FINAL COMMENTS

One thing about VECTORS did disappoint me, but just a little. None of the vectoring keys or flight parameter keys will work if you are in paused mode. You have to be flying to get the information, or weather changes. Actually, I have to admit this makes VECTORS that much more realistic. You're up in the air, flying, using an onboard computer and you really cannot stop time, can you? Besides, if you need both hands, your autopilot works.

Everything considered, I would place VECTORS as one of the most valuable and innovative shareware add-ons yet made available to the owners of FS5 and Flight Simulator Flight Shop. This onboard computer will serve the solo pilot very well in just about all aspects of his flying and will add greatly in his enjoyment of this exciting and fulfilling hobby.

REQUIREMENTS

=Vectors= is modular. Each =Vectors= module consists of the complete program "engine" plus a database of airports for a specific area. For example, there is currently a =VECTORS= for Chicago, Los Angeles, New York, San Francisco and Seattle— i.e. all the default U.S. scenery areas that are standard with Flight Simulator 5.1 (plus, in =Vectors= New York, the additional airports provided by the Microsoft New York Scenery Enhancement disk). They are differentiated only by their databases. Also provided is a =VECTORS= Generic, which lacks only an airports database and is otherwise viable anywhere in the world, with all =VECTORS= features enabled.

=Vectors= requires the Flight Simulator Flight Shop (FSFS), produced by BAO, Ltd. Each module constitutes an ADV file accessible via Options 1-Adventure Factory in Flight Simulator.

As a bonus for MicroWINGS members who give their membership number when ordering, a special =Vectors= Dallas/Fort Worth module will be included with the regular =Vectors= areas.

THE FUTURE FOR =VECTORS=

Additional modules, featuring additional databases in the U.S. and around the world, are in preparation.

For ordering information, the program's author may be contacted via CIS e-mail or an FSFORUM message, using the CIS ID Charles Gulick 71241,321.

About the author - Bill Cline is a retired U.S. Air Force Command Pilot, with over 8,000 flight hours. Presently rated a Commercial Pilot, Airplane Single & Multi-engine Land and Sea, Instrument Rating, CFI in Rotorcraft. Bill is a graduate of the University of Nebraska and is presently fully retired, residing in Maitland, Florida. Bill can be reached on CompuServe at ID [74547,103]. [MW✈]

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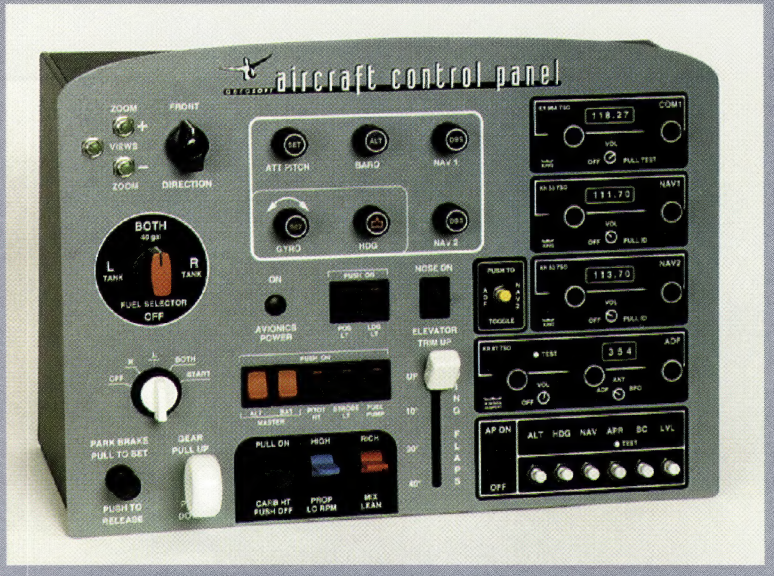
Makes Flight-Simulator 5.1 even more realistic



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UNDER THE HOOD

Flying On Instruments

with Jonathan Stern

Contact The Tower

Gulfstream three niner one, turn left heading three three zero, maintain two thousand three hundred until established on the localizer, cleared for the ILS runway three zero approach. **Gulfstream three niner one, roger, left to three three zero, cleared ILS three zero approach.** *Gulfstream three niner one, contact the tower now on frequency one one niner point one.*

These are the words of air traffic control — ATC for short; and they are words conspicuously absent from Microsoft's *Flight Simulator* — until now. Starting with this issue, the *Under The Hood* column will frequently feature flights to be experienced with the *ATC Workshop* portion of *Flight Simulator Flight Shop*. While not perfect — and bound to be improved upon — the addition of ATC advances the realism of the *Flight Simulator* experience by leaps and bounds.

A *Flight Shop* ATC Adventure simulates an instrument flight rules ("IFR") flight with radar-equipped air traffic control facilities from takeoff to touchdown. This has actually become the norm in the United States as the FAA has installed new radar systems in areas previously not so-equipped. ATC Adventures can be downloaded from BBS's, found as canned adventures on the *Flight Shop* program, or created by the user.

To create adventures, you need to identify a chain of NavAids within *Flight Simulator* range of one another. For example, if you want to plan a trip from Los Angeles to Sacramento, you need to find the names or three letter identifiers of VOR's within 160 nautical miles of each other that will allow you to navigate between the two cities. With low or high altitude enroute charts, you can select a course that will follow the actual airway structure.

Alternatively, you can use flight planning software (e.g., *Navigator 5*) to generate a trip plan. Load the information into the *ATC Workshop* portion of *Flight Shop* along with basic performance data and identifying information about the airplane to be used. At the current time, intersections (i.e., intersections of two radials other than over a NAVAID) can only be utilized by adding information (e.g., latitude, longitude) to the *ATC Workshop* database. The necessary additional data is available (at least for the United States) on MicroWINGS' home page on the World Wide Web. *See* Vol. 3, No. 6 at p. 12 for further details.

For this trip, we are going to use one of the trips that comes packaged with *Flight Shop*. These canned trips include those shown in figure UTH.1.

File Name	Departure Point	Destination
bidmvy.fsp	Block Island, RI	Martha's Vineyard, MA
cgxord.fsp	Chicago Meigs Field, IL	Chicago O'Hare, IL
cmicgx.fsp	Champaign, IL	Chicago Meigs Field, IL
ispbdr.fsp	Islip, NY	Bridgeport, CT
laxsan.fsp	Los Angeles, CA	San Diego, CA
snssac.fsp	Salinas, CA	Sacramento, CA

Figure UTH.1 - Flight Shop's canned ATC adventures.

Let's select the Los Angeles to San Diego trip for today's flight. My current favorite airplane (available in CompuServe's Flight Simulation Forum) is Kerry Gipe's G-IV SP (and I am anxiously awaiting Hardy Heinlin's *Flight Shop*-compatible Boeing 727 panel). To modify the laxsan.fsp ATC Adventure for use with the G-IV SP, do the following from within the *ATC Workshop* component of *Flight Shop*:

Select File/Open Flight Plan (or click the File-Open icon);

Select "laxsan" from the list;

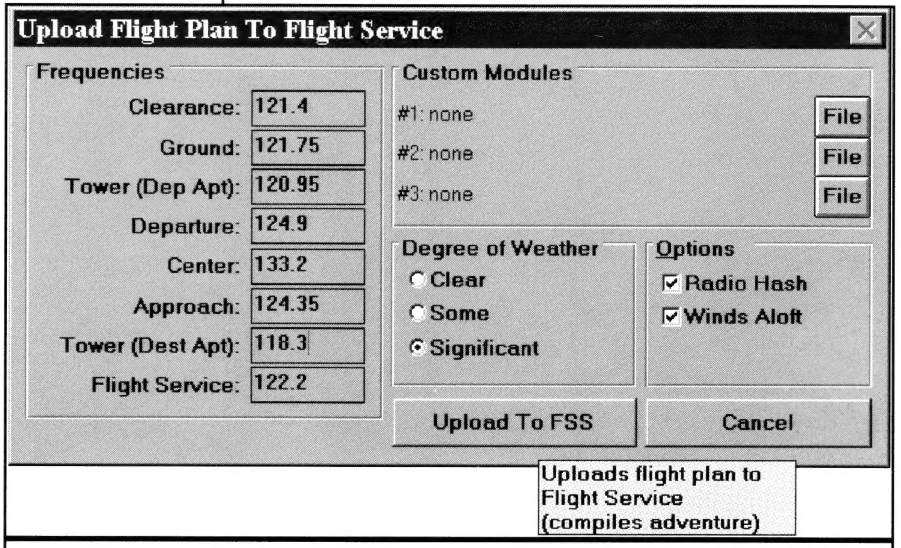


Figure UTH.2 - The Upload screen where you can over-ride default frequencies with the real ones for the area you are going to fly in.

Select Plan/Modify (or click the Modify Flight Plan icon);

In the Pilot - A/C Info screen, select "Gulfstream" for aircraft type and enter the following performance specifications: (a) climb rate - 2,000 fpm; (b) climb speed - 250 knots; (c) cruise altitude - 45,000 feet; (d) cruise speed - 450 knots; (e) descent rate - 2,000 fpm; and (f) descent speed - 300 knots;

Click "OK";

Select File/Save Flight Plan (or click the File-Save icon);

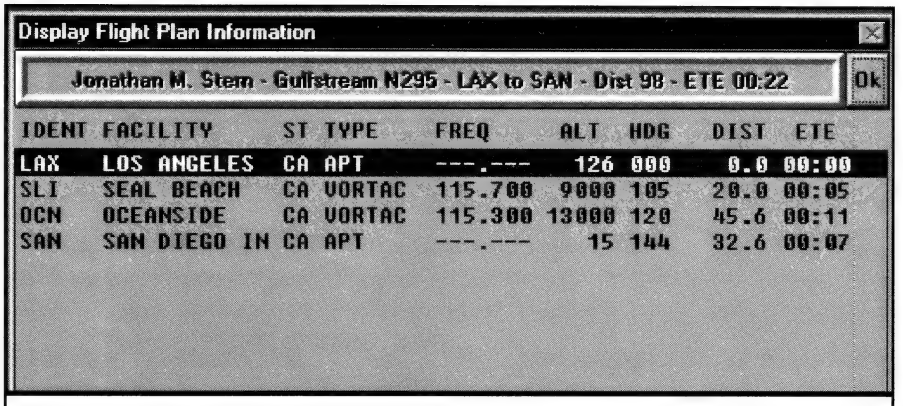

Display Flight Plan Information
Jonathan M. Stern - Gulfstream N295 - LAX to SAN - Dist 98 - ETE 00:22
Ok
IDENT FACILITY ST TYPE FREQ ALT HDG DIST ETE
LAX LOS ANGELES CA APT ---.--- 126 000 0.0 00:00
SLI SEAL BEACH CA VORTAC 115.700 9000 105 20.0 00:05
OCN OCEANSIDE CA VORTAC 115.300 13000 120 45.6 00:11
SAN SAN DIEGO IN CA APT ---.--- 15 144 32.6 00:07

Figure UTH.3 - The release version of Flight Shop printed true headings rather than magnetic headings in the flight plans. The patched version, due out soon, changed this so that magnetic headings are printed as shown above.

Select Pre-Flight/File Plan With Flight Service (or click the Upload Flight Plan To Flight Service icon);

If you wish to use the frequencies used in real life, copy them from figure UTH.2. Select (a) Degree of Weather: Significant; (b) Options: Radio Hash and Winds Aloft; Click "Upload to FSS"; and Select Pre-Flight/Print Standard Flight Plan (or click Print Standard Report icon).

You're now ready to run *Flight Simulator*. Start *Flight Simulator* in the usual manner, and select a jet transport aircraft — the Gulfstream IV SP if you've downloaded it. From the Options menu, select Adventure Factory and select "LAX to SAN" from the list of available adventures.

The introduction to the ATC Adventure offers three options for ATC; they are voice only (Ctrl-W), text only (Ctrl-X), or both (Ctrl-Y). Adjustments to the volume of the ATC voices and engine sounds can be made from within the fsfs.ini file (contained in the *Flight Simulator* directory) to fine tune the relative volumes for a given combination of sound card, amplifier, and speakers. The readme file that comes with *Flight Shop* states that "Beta testers have reported good results with the following values: engine_only_volume = 125, wave_volume = 215, engine_with_wave_volume = 100." Nonetheless, a little experimentation may prove beneficial. I found settings of 100, 255, and 50 worked well with my equipment and kept me from having to strain to hear the controller's instructions.

The command set for the basic use of the *ATC Workshop* is very short. For easy reference, it is reproduced in figure UTH.4.

The first interactive communication is with the Clearance Delivery controller. I tuned Clearance Delivery on frequency 121.4 and pressed Ctrl-K. The controller cleared Kerry Gipe's G-IV to San Diego as filed, climb and maintain 4,000, expect 13,000 ten minutes after departure and to squawk 3-3-7-4. *ATC Workshop* knew, that for this short flight, the airplane wasn't going all the way up to 45,000 feet.

Next, I contacted Ground Control for taxi instructions. I was instructed to taxi to Runway 25R. I had made this trip several times, and this was the first time I had a westbound departure.

LAX is a big airport, and one needs all the help one can get in taxiing on the airport. In fact, I'd go so far as to say that ground operations at big airports are probably the most difficult aspect of navigating in an airplane. The Boeing 747 driver has an advantage over the Gulfstream driver, who, in turn, has an advantage over the Cessna 182 driver. The advantage is the additional perspective to be gained from added cockpit height.

If you have access to an airport diagram for LAX, I suggest you use it. Bring up the map view and zoom so that you can see most of the airport complex. If you do not have an airport diagram, you need to know that the south runway complex contains runways numbered 7 and 25 while the north runway complex contains runways numbered 6 and 24. With that bit of information, your map view and heading

Keystroke	***Function***
Ctrl - E	disables the FPAP (flight plan autopilot), which will fly all aspects of the trip from after takeoff to vectoring to the final approach path at the destination airport
Ctrl - F	enables the FPAP
Ctrl - I	When tuned to the Flight Service Station (defaulted to 122.2), will toggle between an IFR and a VFR flight plan
Ctrl - K	Initiates radio contact on a new frequency
Ctrl - R	Requests the controller to repeat the last instruction issued to your airplane
Ctrl - W	When tuned to the FSS, will issue a weather report and forecast; at beginning of adventure, will select voice only ATC instruction
Ctrl - X	Selects text only ATC instruction
Ctrl - Y	Selects a combination of text and voice ATC instruction
Ctrl - G	Reports to ATC that your airplane is executing a missed approach and initiates radar vectoring for another attempt at the approach
Ctrl - \	Requests from ATC a "radar check," which advises such things as your airplane's altitude, heading, course, and speed

Figure UTH.4 - Flight Shop's Keystroke Command Set

indicator should suffice.

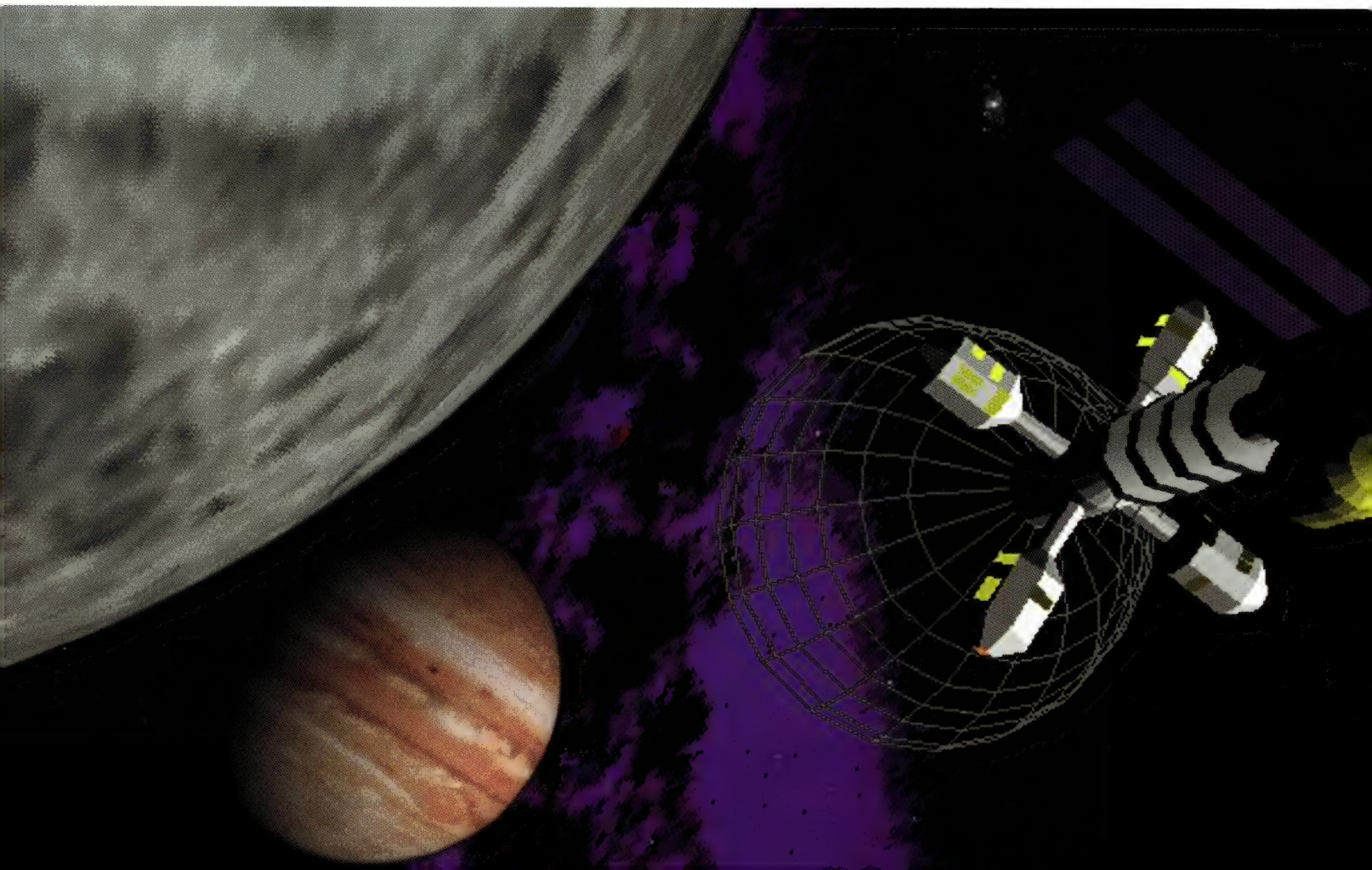
I began to taxi to runway 25R. On the way out, I ran the Before Takeoff checklist. I set the G-IV's avionics for the initial leg of the trip, tuning Seal Beach in the number one NAV so that the autopilot could be used enroute. I set the transponder to 3-3-7-4. While, in actuality, ATC would never know that the transponder was incorrectly set until an airplane was airborne, the controllers in *Flight Shop* will admonish you to squawk the correct code before they'll issue a takeoff clearance.

I also decided to check with Flight Service while still on the ground, because the weather was looking rather ominous — a nice feature of *ATC Workshop*. The Flight Service Station controller advised that there was a "good chance of deteriorating conditions,". Undaunted by this pessimistic bit of prognostication, I continued taxiing to Runway 25R and contacted the Tower on 120.95. The Tower controller advised that I should fly runway heading and that I was cleared for takeoff from Runway 25R.

Now here is something to be particularly careful about. Taking off from the wrong runway can be exceedingly dangerous, mostly because of the possibility of conflicting traffic. With *Flight Shop*, however, the danger is not merely possible — it is a virtual certainty. And the hazard is that the controller will cause your airplane's engines to fail, necessitating an emergency (likely off-airport) landing. Having been one, I can tell you that controllers sometimes wish for a device that would accomplish this result. While a clever bit of programming, this is an annoying interruption to your ATC Adventure, and it requires that you start the whole process over again. A few of the runways in the *Flight Shop* database are assigned the reciprocal number and, with those, a takeoff from the *correct* runway will result in total engine failure. From a very frustrating experience (three consecutive emergency landings), I know that White Plains, New York, (HPN) is one example of this phenomenon.

After I was airborne, the Tower controller instructed me to climb to 4,000 feet, turn to a 100° heading, and contact Departure Control on 124.9. Dutifully, I leveled off at 4,000, flew the 100° heading, and contacted Departure Control. To make my life somewhat easier, I engaged the autopilot to hold altitude and heading.

ATC Workshop builds some interesting features into the Adventures, one of which is communication with other aircraft. This enhances the realism of the simulation and adds to its challenge. It requires discrimination between calls to your airplane and calls to other aircraft (about which you have significantly less interest). An additional selectable feature called "radio hash" causes an audible tone just prior to ATC transmissions directed to your airplane. Some of the background communications, however, are not what you would really hear. As an example, air traffic controllers do



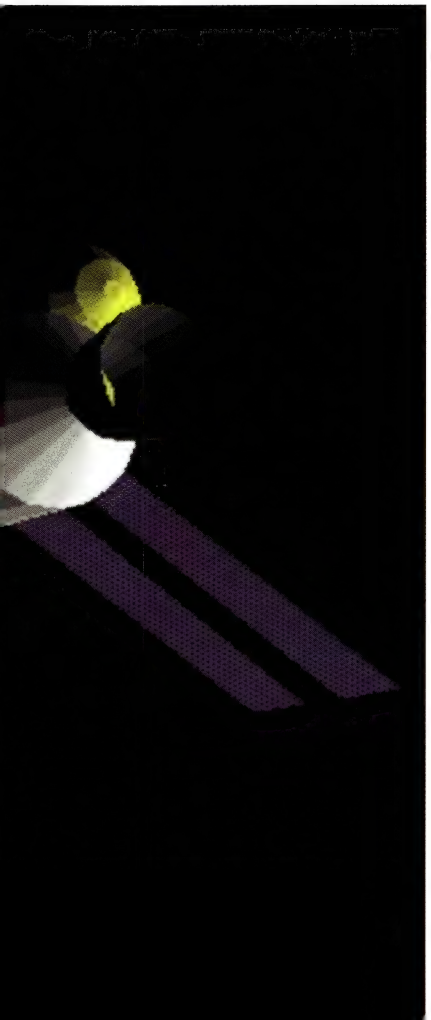
not tell airliners to "expect radar check," because ATC radar is not checked by the airliners. Likewise, airplanes are not told to "prepare for hand-off to approach," because there is nothing for which to prepare.

A revision of *Flight Shop* should eliminate nonsensical background and substitute things that are typically heard on ATC frequencies. My other suggestion in this area of the program has to do with the different voices heard on the radio. There are about four different voices, but they are all heard on the same radio frequency. Generally, in the real world, there is one controller broadcasting on each frequency. The realism of the ATC Adventures would be enhanced if a different controller voice were used each time the radio frequency is changed. This would require significantly more hard drive space but would be worthwhile.

Within a minute, the Departure Controller came back to me, advising that he had radar contact and instructing a left turn to a 90° heading. Having tested another feature of *Flight Shop*, he also advised "Tower reports gear still down." Given all the money expended to have retractable landing gear, it seemed a good time to pull it up. The Departure Controller also switched me to the Los Angeles Center on 133.2. With *Flight Shop* ATC Adventures, all trips will involve the Air Route Traffic Control Center ("ARTCC"). In real life, many low altitude trips are made without ever entering airspace controlled by the ARTCC. These are known as Tower Enroute Control, or TEC, because a series of TRACONs, which are Tower facilities, handle the entire enroute portion of the flight. Nonetheless, from the pilots' perspective, there is no difference in operation, and the fact that all *Flight Shop* flights involve ARTCC's in no way detracts from the simulation.

When I made initial contact with the Center Controller, he cleared me direct to Seal Beach at 9,000 feet. I found Seal Beach to be on an 81° course and flew direct while climbing to 9,000 feet. With a 10,000 foot speed restriction of 250 KIAS, I would have begged for a higher altitude had I been able to beg. Fortunately, *ATC Workshop* is designed to use "custom modules," and two that allow the user to request altitude changes and monitor the 250 KIAS below 10,000 feet have been released (downloadable from the MW Web site, s*ee* Vol. 3, No. 6).

When I was about 3.5 miles from Seal Beach, the Center Controller cleared me direct to Oceanside and up to 13,000 feet. At the same time he advised that my heading should be 120 degrees. While I appreciated the advice, the instruction was ambiguous. Was I to fly direct to Oceanside or fly a heading of 120 degrees? In the real world, air traffic controllers are required to instruct an airplane to "resume your own navigation" after radar vectoring an airplane. My suggestion for the first revision of *Flight Shop* is that NavAids be used, except when ATC is radar vectoring for an approach. If the pilot is lost or confused, there should be a command by which he can request radar vectors.



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Microsoft Home

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As I arrived in the vicinity of Oceanside, Center cleared me direct to San Diego, told me that my heading should be 1-4-0, instructed me to reduce speed, to descend to 2,000 feet, and to contact approach on 124.35.

On this trip, I avoided a problem in *Flight Shop* of which all users need to be aware; I call it the "you missed second base" problem. You know how the base runner in a baseball game has to go back and tag second base if he fails to actually touch the base the first time around? The same is true with the NAVAID fixes in an ATC Adventure. If the airplane does not get within a certain distance of the NAVAID flying within a narrow range of headings, the program will not recognize that the fix has been passed. Should this happen, no instructions beyond the missed fix will be issued. This means that a pilot could fly several nautical miles or more and then have to turn around to fly back to "tag second base." To avoid this problem, if you do not receive further instructions upon reaching a fix, fly a few miles beyond it, turn around, and fly back over it.

Fortunately, I did tag second base (i.e., Oceanside). And so I began my descent to 2,000 feet, tuned and tracked directly to San Diego, and contacted approach control. I was a little confused by the fact that ATC had instructed me to reduce speed but didn't say by how much. Being in the G-IV, I slowed to 250 KIAS, because I had to before descending below 10,000 feet. Approach control acknowledged my call, advised "radar contact," and told me to stand by. Fortunately, "stand by" to an IFR flight does not mean "do not enter my airspace until I talk to you again." So I continued toward San Diego. I was pleased to be flying in an area that was not particularly mountainous.

My luck had not been as good on two previous flights: one from Pittsburgh to Lewisburg, West Virginia; the other from Albuquerque, New Mexico, to Denver, Colorado. On both, I had been "in the soup," at an assigned altitude, and receiving radar vectors when my airplane slammed into a mountain. The problem, you see, is that *ATC Workshop* recognizes airport elevations but is unaware of the location of surrounding mountains. This is a problem that is likely to continue to cause mountain crashes. The patched version of FSFS, due out soon, allows you to adjust the Pattern Altitude to something higher than the default 2,000 feet AGL.

After a few minutes, the approach controller had me turn right to heading 1-6-0. I knew that I was now being radar vectored to the final approach. I just didn't know which approach. ATC is required to advise in advance which approach will be used when the destination airport is served by more than one instrument approach procedure. The controllers in ATC Adventures do this if the runway to land on has an ILS.

I failed to maintain a 2,000 foot per minute rate of descent on the way down. As a result, Approach instructed me to make descending 360's to get down to 2,000. Once I reached 2,000, I was instructed to fly headings that corresponded to the downwind, base, and final legs of a traffic pattern. Such a pattern is useful for the controllers in maintaining separation in the pattern and spacing at the runway. *ATC Workshop* appears to be initially setup for a slow airplane, such as the Cessna 182. Because the radius of turns is greater at higher speeds, faster airplanes require a bigger pattern. To get around this problem, there is a parameter called "IFRPatDist" in the FSFSADV.INI file in the Flight Shop directory, which, when changed to a value of 15, provides intercepts that are appropriate for jet aircraft.

I continued on downwind until Approach Control instructed a turn to heading 1-2-0, maintain 2,000 until established on the localizer, runway 9 localizer in use, frequency is 110.90, cleared for the approach, contact the tower on 118.3. At this time, I had a little problem developing in the cockpit. I called the Tower and was cleared to land. But I couldn't get the localizer tuned to the runway 9 localizer. It would only tune Runway 27's localizer (which is on the same frequency). I ended up having to execute a missed approach. After the airplane was established in a climb, I pressed Ctrl-G to report the missed approach. The Tower confirmed that I was executing a missed approach and told me to climb to 2,000 feet and contact approach control for vectors back into the pattern. The Tower *does not* tell you the frequency for Approach Control, so you must be sure to remember the frequency, preferably by writing it down.

While I was being radar vectored, I continued to try to tune the correct approach. Ultimately, I found a box under Flight Sim 5's Nav/Com/Navigation Radios menu selection that read, "Choose the desired localizer:" and had choices of "Localizer 1," "Localizer 2," and "Auto Select." I chose Localizer 1 and met with success.

I learned one benefit of executing the missed approach and trying a second time. At least on this flight, the Approach Controller took me out fifteen miles before turning me back in, and my trusty G-IV had plenty of room to get established on the approach. This time I had no problem with the approach, and I broke out of the clouds in time to make a smooth landing on Runway 9. While rolling out, the Tower instructed me to turn off at the first available taxiway and to contact Ground Control on 121.75. I did so, and the Ground Controller instructed me to taxi to parking. With a great sense of accomplishment, I did exactly that.

About the author - Jonathan Stern is counsel with Dombroff & Gilmore, P.C. in Washington, D.C.. He holds commercial pilot, flight instructor, ground instructor, and control tower operator certificates from the FAA. He is also the author of two books on Flight Simulator: Microsoft Flight Simulator Handbook (Macmillan 1995) and Flying On Instruments With Flight Simulator (Compute! Books 1987). Jonathan can be reached on CompuServe at ID 73502,2437. [MW✈]

Review of...

Win Planner v2.0

Manual Pre-Flight planning is a very time consuming task which requires supporting aeronautical maps. As a pilot for a simulated airline, it is necessary to have a good automated flight planning tools. The tool I use is a shareware program, Winplanner Version 2.0, and its associated databases by Antoine Becker. This program and its associated data files can be on the FSFORUM under the keyword "Winplan." Why would one purchase a shareware flight planning program? What first attracted me to Winplanner, was that it was the only Windows 3.1 compatible flight planning program on CompuServe's FSFORUM.

Winplanner 2.0 saves me countless hours for flight planning. Certain features of Winplanner is what attracted me to this program: Figure WP.1 shows the flight planning screen. Although I use it primarily for IFR planning, it can also be used for VFR planning. Notice that the flight planning screen has a toolbar across the top left side. This tool bar allows you to access every major feature in the program:

(1) Create new flight plan
(2) Open Existing flight plan
(4) Save Current Flight Plan
(5) Print Current Flight Plan
(6) Aircraft Editor- See the text on aircraft editor
(7) Winds Aloft and Surface Winds- See the text on Weather Wizard
(8) Set Area- Selects the area for the checkpoints in the left checkpoints window.
(9) Fuel/Economy (Optimizes altitude for)- See the text on Altitude planning
(10) Altitude Profile- See the text on Altitude Planning
(11) Flight Wizard- See the text on Autorouting Wizard
(13) Logbook -See the text on Logbook
(14) Map- See the text on Open Database Structure
(15) Help

The lower part of the flight plan screen is divided into two windows, the left window contains the checkpoints for the area. In this case, the checkpoints shown are in the Los Angeles Sectional area. The right window contains the flight plan itself. A new feature of Version 2.0 is that you do not have to be in the appropriate area to edit the flight plan. If you know the identifier, then you can construct the flight plan without consulting the checkpoints in the various areas. In addition, when you change areas, the flight plan in the flight plan window remains.

Winplanner has the following advantages and capabilities:

(1) Autorouting Wizard
(2) Open Database Structure
(3) Altitude Profile Planning
(4) SID/STARS
(5) Weather
(6) Database Editing
(7) Logbook

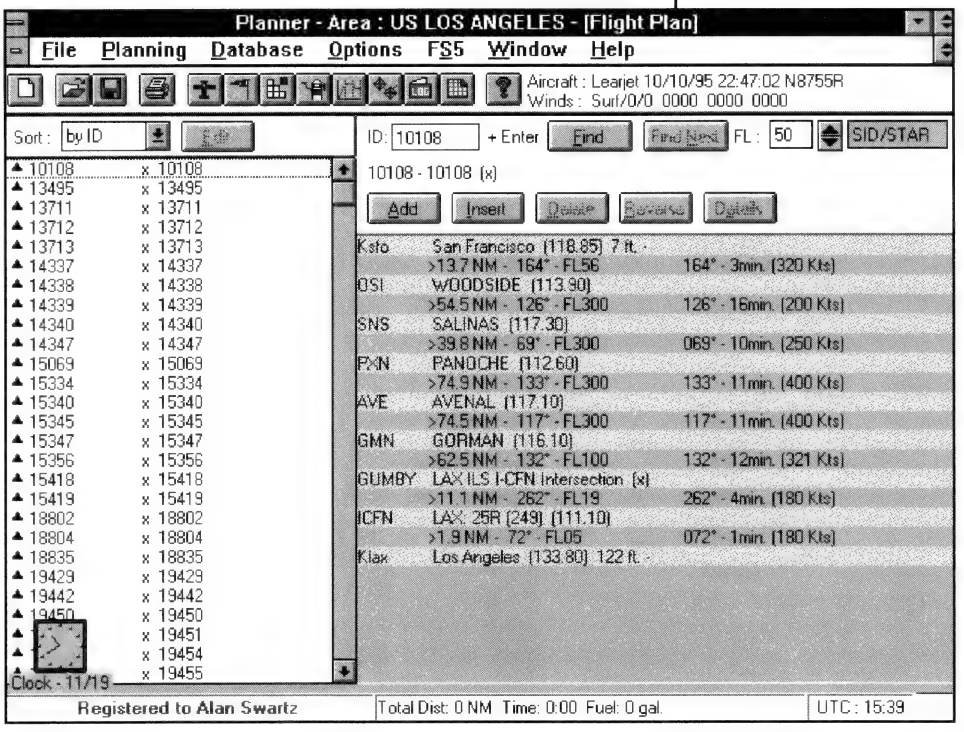
Planner - Area : US LOS ANGELES - [Flight Plan]
File Planning Database Options FS5 Window Help
Aircraft : Learjet 10/10/95 22:47:02 N8755R
Winds : Surf/0/0 0000 0000 0000
Sort : by ID
ID: 10108 + Enter Find Find Next FL : 50 SID/STAR
10108 - 10108 (x)
Add Insert Delete Reverse Details
Ksfo San Francisco (118.85) 7 ft. -
>13.7 NM - 164° - FL56 164° - 3min. (320 Kts)
OSI WOODSIDE (113.90)
>54.5 NM - 126° - FL300 126° - 16min. (200 Kts)
SNS SALINAS (117.30)
>39.8 NM - 69° - FL300 069° - 10min. (250 Kts)
PXN PANOCHE (112.60)
>74.9 NM - 133° - FL300 133° - 11min. (400 Kts)
AVE AVENAL (117.10)
>74.5 NM - 117° - FL300 117° - 11min. (400 Kts)
GMN GORMAN (116.10)
>62.5 NM - 132° - FL100 132° - 12min. (321 Kts)
GUMBY LAX ILS I-CFN Intersection (x)
>11.1 NM - 262° - FL19 262° - 4min. (180 Kts)
ICFN LAX: 25R (249) (111.10)
>1.9 NM - 72° - FL05 072° - 1min. (180 Kts)
Klax Los Angeles (133.80) 122 ft. -
Clock - 11/19
Registered to Alan Swartz
Total Dist: 0 NM Time: 0:00 Fuel: 0 gal.
UTC : 15:39

Figure WP.1 - The flight planning screen of WinPlanner.

Autorouting Wizard

The Autorouting wizard, otherwise known as the Flight Wizard automatically routes your flight plan. Although some of the routing may push the limits of the VOR ranges, the flight plan can be tailored in the map mode (see figure WP.3) by viewing adjacent VOR stations and selecting closer or more convenient stations. I generally make a first pass is with the Flight Wizard and then edit the flight plan to include the approach plate checkpoints and correct altitude profiles. Version 2.0 has a .wav file that begins the wizard with a little music. One almost

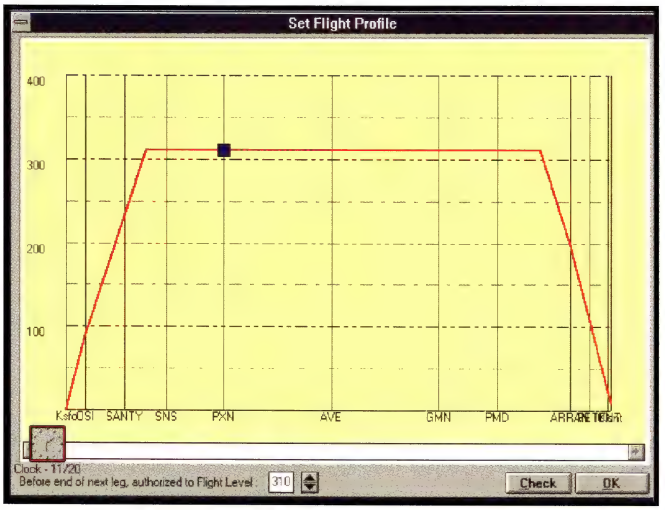

Figure WP.2 - The flight altitude profile chart.

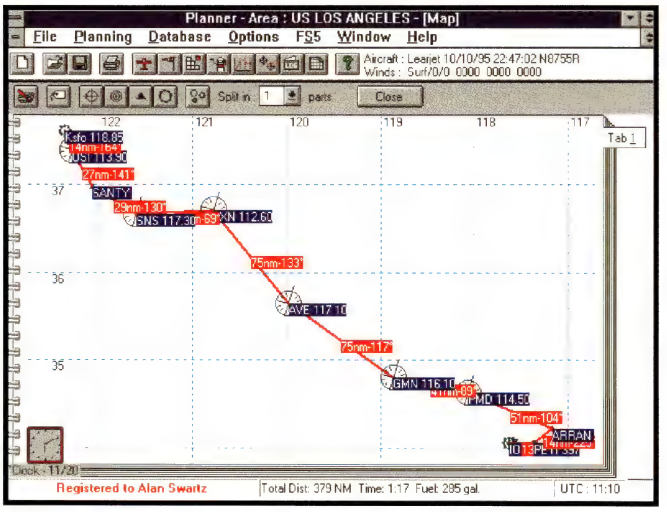

Figure WP.3 - Win Planner's map view of a flight plan.

expects the music to continue while the wizard is running.

Open Database Structure

Winplanner V2.0 has an open database structure that allows the user to upload data files from FSFORUM , input a Microsoft Access database, or directly use a scenery *.BGL file.

In addition, this database has the ability to eliminate duplications. Version 2.0 has added choices on how the duplications are eliminated thereby eliminating duplications more effectively. Winplanner also color codes the checkpoints so that you know how the data was imported (manually, BGL file, text file, or part of original database). Presently all the NavAids and Waypoints you'll ever need is on the FSFORUM under the keyword Winplan. However, the unregistered user cannot import databases or files. Since Winplanner has an open database, it can become easily overwhelmed with the default areas. I defined smaller areas for the USA defined by VFR sectional boundaries. Some of the databases available: the complete ISS set, the navaids for the default FS5.1, Caribbean scenery, and the SID/STAR checkpoints. One must be careful when importing checkpoints, especially from BGL scenery. Much of the airports in the third party scenery are identified as Airport, without the ICAO identification. When you remove the duplicates, all those with identical IDs will be obliterated. I typically keep only those airports with ICAO identifications to avoid this problem.

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Altitude Planning

Winplanner has an excellent tool for optimizing fuel economy for different aircraft by selecting Fuel /Flight Level wizard. It will optimize cruise altitude for fuel economy. Figure WP.3 shows the Fuel Wizard menu. In addition it will provide the correct ascent and descent altitudes as well. In addition, the program allows you to tailor the speeds at different altitudes. In addition, an interactive flight profiler allows you to graphically view the flight profile and interactively tailor it by click and pointing the mouse. Figure WP.2 shows the Altitude profiler.

SID/STARS

For each major airport standard flight plans called Standard Instrument Departures

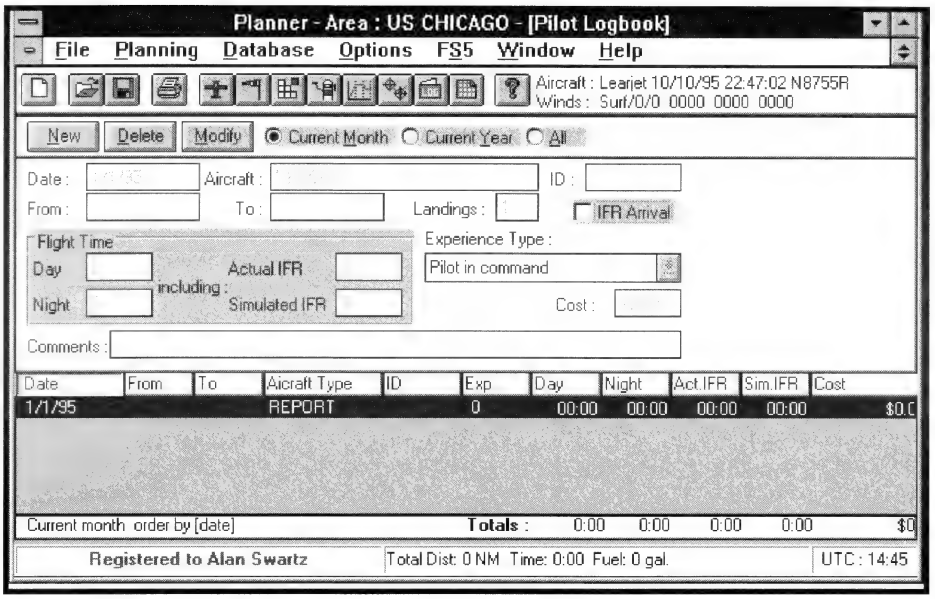
Planner - Area : US CHICAGO - [Pilot Logbook]
File Planning Database Options FS5 Window Help
Aircraft : Learjet 10/10/95 22:47:02 N8755R
Winds : Surf/0/0 0000 0000 0000
New Delete Modify Current Month Current Year All
Date : Aircraft : ID :
From : To : Landings : IFR Arrival
Flight Time
Day Actual IFR
including :
Night Simulated IFR
Experience Type :
Pilot in command
Cost :
Comments :
Date From To Aircraft Type ID Exp Day Night Act.IFR Sim.IFR Cost
1/1/95 REPORT 0 00:00 00:00 00:00 00:00 $0.0
Current month order by [date]
Totals : 0:00 0:00 0:00 0:00 $0
Registered to Alan Swartz
Total Dist: 0 NM Time: 0:00 Fuel: 0 gal.
UTC : 14:45

Figure WP.4 - Win Planner's comprehensive Pilot's Log Book.

(SIDS) and Standard Terminal Arrivals and Profile Descent Procedures (STARS) can be programmed into Version 2.0. I have uploaded to CompuServe, the checkpoints (4,000) file suitable for Winplanner for all USA SIDS and STARS. The checkpoints shown in the left hand window in Figure WP.1 are the SID/STAR checkpoints. The SIDS can be selected for the departure airport. The STARS can be selected for the arrival airport. SIDS and STARS are canned flight plans generated by the FAA for consistency. Approach plates (IAP's) also can be treated as STARS. Version 2 has the capability to generate intersection points defined by the NavAid, NavAid bearing, and distance from NavAid.

Weather Wizard

Although I don't use this function regularly, Winplanner has its own weather wizard built in that can generate weather situation files and account for winds aloft. The Weather Wizard has the capability of storing the surface observations and winds aloft. The weather wizard can write a weather situation file to FS5.1. Weather Wizard in Winplanner has the ability to program winds aloft. However, I saw no such capability in the unregistered version of Antoine Becker's stand-alone program Weather Wizard. Perhaps the registered version has this capability.

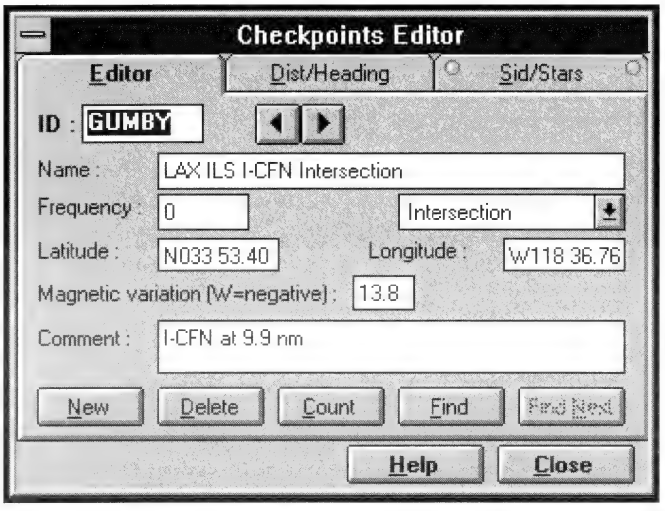
Checkpoints Editor
Editor Dist/Heading Sid/Stars
ID : GUMBY
Name : LAX ILS I-CFN Intersection
Frequency : 0 Intersection
Latitude : N033 53.40 Longitude : W118 36.76
Magnetic variation (W=negative) : 13.8
Comment : I-CFN at 9.9 nm
New Delete Count Find Find Next
Help Close

Figure WP.5 - Win Planner's Data editor.

Database Editing

Winplanner has an extensive ability to edit database checkpoints. Figure WP.5 shows the editor screen. One can select an airport, intersection, VOR, or NDB. Win Planner provides a distance calculator to compute the longitude and latitude of an intersection. As an example, GUMBY is 9.9 NM from ICFN (LAX Runway 25R ILS) on a bearing of 249 degrees. Typing in this information automatically calculates the longitude and latitude for GUMBY. When an airport is selected, one can edit the SID/STAR database.

Logbook

Winplanner has the ability to keep a logbook for the pilot. Figure WP.4 shows the logbook page. I do not use the logbook myself.

Drawbacks

No program is without its drawbacks, Winplanner is no exception. Winplanner only supports lower resolution. (640 x 480 256 color) video. Winplanner also involves a lot of up-front time importing databases and tailoring areas small enough to accommodate a large database. In addition, the large database means that it takes a while for the program to go into the flight planning menu shown in WP.1. Another drawback is the Simulated Airline advertising in the help menu. I would like it changed to reference the various on-line forum generated help files (such as AIRLINES.TXT in CompuServe's FSFORUM).

Conclusion

I would recommend Winplanner for anybody who does a lot of cross country flying for simulated airlines or for other purposes. Winplanner V2.0 is a very flexible flight planning program, which has a lot of features. For those who tried earlier versions and did not like it, I suggest you try it since there have been many improvements.

About the author - Alan Swartz is an engineering manager at Orbital Sciences Corporation. He is also President and founder of Alta Loma Airlines (a virtual airline). He has been flying Flight Simulator 5.0 and 5.1 for about 2 years. [MW✈]

FLIGHT SCHOOL

ADVANCED MANEUVERS

by Bill Higgins

During flight training, you will learn maneuvers that cover the full scope of the airplane's handling characteristics and responses to control movements. Such maneuvers include flight at critically slow airspeeds, stalls, and constant altitude turns. The general purpose of these maneuvers it to teach you how the airplane responds and reacts in a variety of power, altitude, flap, and landing gear configurations. Practicing these maneuvers not only develops your perception, orientation, and proficiency, but also your feel for the airplane.

Flight At Critically Slow Airspeeds

Maneuvering at critically slow airspeeds (also referred to as slow flight or flight at minimum controllable airspeed) helps you develop a feel for the controls and an understanding of how load factor, pitch attitude, airspeed, and altitude control relate to each other. Knowledge of these relationships will aid you in maintaining proper airspeeds and pitch attitudes for changing flight conditions. It also helps you asses the reduction of control effectiveness during flight at slower than normal speeds and determine the power required for flight at different airspeeds.

During critically slow airspeed maneuvers, you should fly the airplane slightly above the stall speed. The speed must be sufficiently slow so any reduction in speed or power, or increase in load factor results in an immediate stall.

The procedures for entering the maneuver from cruise flight help develop smoothness and coordination of elevator, rudder, and power controls. The initial objective is to perform a smooth transition from cruise flight to critically slow airspeeds while maintaining altitude. Enter the maneuver at an altitude that will allow you to fly it no lower than 11,500 feet AGL.

Before you begin any maneuver which is not necessary for normal flight, you should execute a clearing turn. A **Clearing Turn** usually consists of at least a 180° change in direction. A typical method of executing this maneuver is to make two 90° turns in opposite directions. The clearing turn allows you to scan the local area for traffic which may be hidden by blind spots on your airplane.

Entry Procedures

To enter the maneuver, first execute a clearing turn. Once the area is clear of traffic, apply carburetor heat if it is normally used when power is reduced, then reduce power several hundred RPM below the power setting required to maintain altitude. After reducing power, apply any necessary back pressure to the control wheel to maintain altitude as the airspeed decreases. If you apply back pressure to fast, the airplane climbs; if you apply it to slowly, the airplane descends. During this transition, use the trim to remove excess control wheel pressure.

When the airplane nears the desired pitch attitude and airspeed, increase power to a setting which will maintain altitude. Then make small power adjustments to maintain altitude and re-trim the airplane, as necessary, to remove control wheel pressures (see figure FS.1).

As the airplane slows, you will also notice that the rudder pressure requirements change. Right rudder pressure becomes necessary for proper coordination and heading control. The high angle of attack, high torque, and pronounced p-factor create left turning tendencies. If you do not apply right rudder, these tendencies will cause the airplane to turn to the left. You should refer to the ball of the turn coordinator to help determine the amount of rudder required.

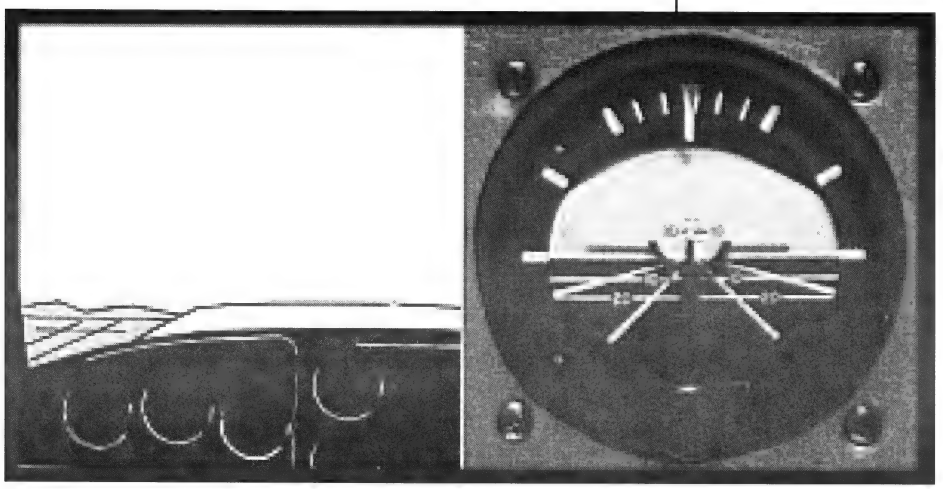

Figure FS.1 - What the desired pitch attitude should look like at a critically slow airspeed.

While you are maneuvering at critically slow airspeeds, you will get a sensation of insufficient control response. The controls feel "mushy", and it is necessary to use greater control movements for corrections than are normally required. The response of the airplane to control movements is also slow.

Altitude and Airspeed Control

If you attempt to climb by applying back pressure during flight at critically slow airspeeds, you will not be successful. Instead, the airspeed will decrease, stall indications will occur, and the altitude will decrease.

If you lose altitude by lowering the nose, the airspeed will increase beyond acceptable limits. The control procedure for regaining lost altitude is to apply power. When you do this, it will also be necessary to make a small increase in pitch attitude to maintain the desired airspeed. To lose altitude, reduce power and, at the same time, reduce pitch attitude slightly.

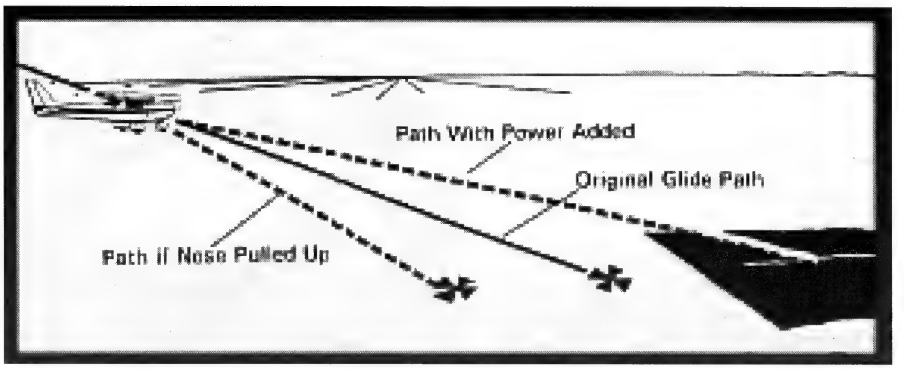

Figure FS.2 - Finding the Key Position in the pattern for emergency landings.

The approach to landing phase of flight gives a practical application of the relationship of power and airspeed. Assuming a stabilized approach, if the airplane appears to be low while on final approach at a constant airspeed, you must apply additional power and adjust pitch attitude as necessary. (see figure FS.2).

Climbs, Descents, and Turns

When you are flying at critically slow airspeeds, altitude is controlled by power. To climb, add power; to descend, reduce power and adjust pitch attitude as necessary to maintain a constant airspeed. To execute turns at critically slow airspeeds, you must use a slightly different technique. As in any turn, part of the total lift force is diverted to make the airplane turn. For example, during a turn at normal cruise airspeed, you must apply slight control wheel back pressure to gain the extra vertical lift needed. This requirement results in a slight decrease in airspeed. However, during flight at critically slow airspeeds, the loss of airspeed will bring the airplane closer to the stall. The steeper the turn, the greater the load factor and the higher the stall speed. Therefore, you should make shallow turns and add power to maintain sufficient airspeed to prevent a stall. Even when you apply full power, a stall may occur because you have exceeded the critical angle of attack while trying to maintain altitude.

Use of Flaps

You will also practice maneuvering at critically slow airspeeds using flaps and landing gear (if the airplane has retractable gear). During practice, the instructor will tell you to lower the flaps. You should do this a small amount at a time. At each position, pause to adjust the attitude to correct airspeed, adjust power to maintain altitude, and re-trim to relieve the control wheel pressures.

Addition of flaps to the first position (10 ° to 15°) normally causes changes in pitch attitude, power and trim. However, with flaps extended beyond this amount, large changes may be required. When you extend the flaps completely, the pitch attitude change and power requirement are usually quite pronounced. With the wing flaps fully extended, drag is very high, and a large percentage of available power is required to maintain altitude. Full power will probably produce only a very slow rate of climb, if any.

Return to Cruise Flight

To return to cruise airspeed from flight at critically slow airspeeds, first apply full power while maintaining a constant altitude, then raise the flaps slowly, one position at a time. This technique is recommended to allow the speed to increase gradually as you retract the flaps [see figure FS.3]

Well, that covers this issue's installment on advanced flight maneuvers. Join me in the next issue as we analyze and perform the multiple variations of the stall.

About the author - Bill Higgins Jr. Is a member of the CompuServe FSFORUM Staff, and has been a Flight Sim enthusiast since FS3. He excels in Scenery Design and problem solving. Bill also holds a Private Pilot's License and is Instrument rated. He can be reached on CompuServe at ID 73177,3106. [MW✈]

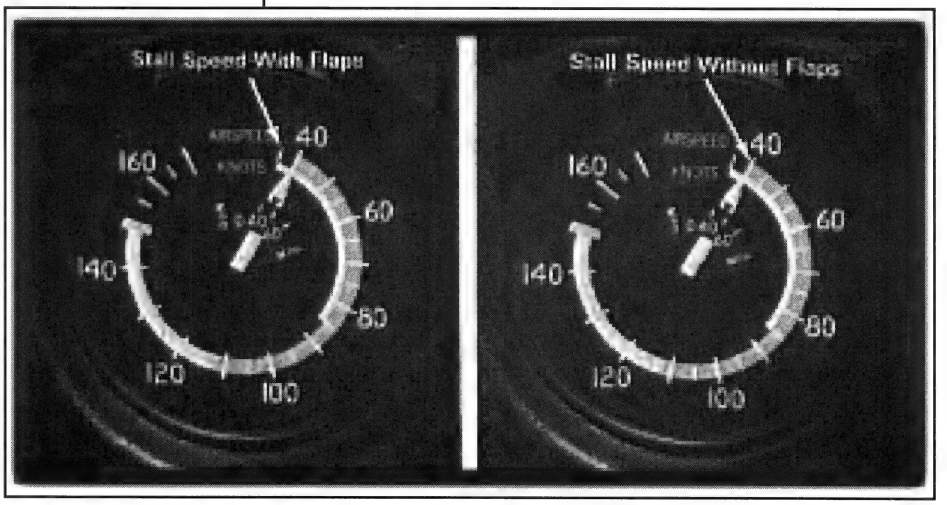

Figure FS.3 - The Effect of Flaps on Stall Speed.

CompuServe

Your Electronic FBO

by Greg Hannigan

A FRIGID TROPICAL PARADISE

I pull up to the red traffic light and it amazes me that I can't see anything to the left or right of me. The infamous USA Blizzard of 1996 has left us with piles of plowed snow that are simply too high to see over when you're driving a Honda.

It's this whole winter thing that's getting to me, to be honest. This blizzard dumped two feet of snow on top of about a foot that was already on the ground. To top it off we've got daily temperature highs that have a hard time getting over that 20 degree Fahrenheit threshold, and nighttime lows that can't keep their head above zero.

I need a break from this. Some of my coworkers on CompuServe's FSFORUM would have me head on down to their home state of Florida, but that doesn't seem like it'll be much comfort. At about the time of our blizzard up north, my Floridian friends were dealing with daytime temperatures of about 40 degrees. My heart does indeed bleed for them, but I need something more than some time at a place that itself is only a little above the point that water freezes. I need ...

The Caribbean! That's it!

My mind shifts back to July, a time when I really didn't need a tropical paradise. The air in the New York area seemed tropical itself about then, with temperatures in the 90's and humidity that chased closely behind. It was the middle of one of the longer, hotter, drier summers we'd had in recent years, but I and my FSFORUM friends didn't care. We were headed to Kingston, Jamaica's Norman Manley International Airport for Flyin10, the tenth in a series of FSFORUM Flyin events that brings excitement and thrills otherwise not known to the normally solitary Microsoft Flight Simulator experience.

I recall flying down to Kingston the day before the event, to get things ready and set up for the onslaught of the FSFORUM membership the next day. That meant flying the route with Flight Simulator, paying special attention to the specific Flyin STAR I had chosen to fly into the Jamaica area. Being careful to tune up each VOR and track it on the proper radial, I made my way through the web of flight that was that STAR and touched down at Kingston's Norman Manley in temperatures that were tropical on both sides of the screen.

What is a CompuServe FSFORUM Flyin? In a nutshell, it's an event that attempts to help you *share* your Flight Simulator experience with others. It's structured in such a way as to give you the sense that you're being *watched* as you fly across the FS skies.

FSFORUM holds Flyins 2 to 3 times a year. We pick in advance an interesting destination and put together an event that will bring us to that location in our virtual FS worlds. We've flown to St. Louis, Washington, DC, New York, Puerto Rico, and most recently, Kingston, Jamaica.

You, the FSFORUM Flyin pilot, take off from the airport closest to you in the "real world". For me, living in the northern suburbs of New York City, that's HPN (Westchester County Airport). You then fly a carefully planned route that takes you from your home area to the destination of the Flyin. At a specified point before actually landing, you initiate a Dual-Player connection with someone designated as a "tower operator" using Flight Simulator and your computer's modem. That tower operator is also online with an FSFORUM conference room on a second computer. He "watches" you as you make your landing approach, describing your landing as closely as possible in the conference for the benefit of those who have landed before you.

For the pilots in the conference room, the experience is something akin to gathering around a ham radio and listening to

Figure CIS.1 - The Welcome banner that greeted Flyin 10 participants

descriptions of their friends coming in for a landing. For the pilot, it's white-knuckle flight at it's best; knowing that *somewhere*, though you don't know exactly where, *somebody* is watching you. As you make your final approach, as those runway numbers get larger and larger on your screen, your pulse quickens and your palms sweat, knowing that a bad move now will almost guarantee an ugly landing; one that not only you, but someone else, will see. It's not something you really want to have happen when you know that others will learn of your fate seconds after it happens.

Our Jamaican Flyin was the second in a series where we attempted to heighten the level of realism for our incoming pilots. Pilots had the option of choosing either of two different Flyin options that were custom tailored to match either their level of expertise or their desire to make their flight realistic. Real life weather reports were posted and continually updated on FSFORUM for either pilot's use in simulating the conditions that existed in Kingston on that day.

The "VFR" Option, designed for sim pilots of limited experience or those who simply wanted to participate without going through the pains of filing and adhering to a flight plan, gave our members the freedom to conduct much of their flying in their own manner. These pilots were on their own to get themselves to the Kingston TCA using whatever route they chose. Upon getting voice clearance and a tower assignment from Approach Control, the VFR pilot then made the Flight Simulator DP connection to their tower and came in for a landing.

Flyin10 pilots who registered for our "IFR" option were in for a more realistic experience. These members tended to be more experienced with Flight Simulator and the real world of aviation, and their flights were much more structured. IFR pilots were required to file a flight plan with our Flight Service Stations in advance of their departure, and were in much closer contact with FSS and our Approach Control facilities before making their final touchdown. In addition, the final legs of the IFR pilot's flight were pre-determined - as they made their way closer to the Kingston area, they flew the route prescribed by a STAR (Standard Terminal Arrival Route) that they had personally chosen prior to take-off. Their specific choice of the three available STARs determined their path around and/or over the island of Jamaica to the city of Kingston and Norman Manley International Airport, both on the island's south side.

Despite the differences in their enroute flying, both VFR and IFR pilots were greeted by the beautiful scenery of the Microsoft Caribbean scenery package for FS5 and its depiction of the Kingston area. If a pilot was skillful enough to land in the first third or so of runway 12 at Norman Manley, he received taxi instructions from his tower operator that brought him to special "Easter Egg" scenery that was specifically designed for the Flyin to welcome pilots and congratulate them on their successful flight and landing (see figure CIS.1).

After landing, both VFR and IFR pilots were afforded the same thrill of being able to share their flying experience with other pilots online with CompuServe's FSFORUM. Our "Flyins & Rallies" conference room was specifically set aside for our weary pilots, which was an especially nice treat, I'm sure, after the stress of fighting those 20 knot headwinds as they touched down. I myself was a tower operator for many pilots who landed at Norman Manley that day, and I remember being promised many tall, cold beverages that were to be waiting for me after I climbed back down from my tower perch. Alas, with the world of Flight Simulator being a virtual one, I had only the remnants of a luke-warm Pepsi (that had sat for far too long beside my monitor) with which to toast the success of the day.

Screaming car horns and a series of loud knocks coming from my left window shook me from the depths of my Jamaican daydream. "Hey buddy, you waitin' for the next blizzard, or what," an angry voice blares from outside my window. I look up in time to see that a lovely shade of green that's coming from the traffic light is turning to yellow. Before that light changes color once again, I ease out the clutch and proceed forth on my journey.

That beautiful green reminds me that it's rumored that there *will* be a Spring.

About the author - Greg Hannigan is an Assistant Sysop for CompuServe's Flight Simulation Forum because he is a horrible golf player. Greg's CompuServe ID is (71554,763); stop by and say hello, he'd love to hear from you! [MW✈]

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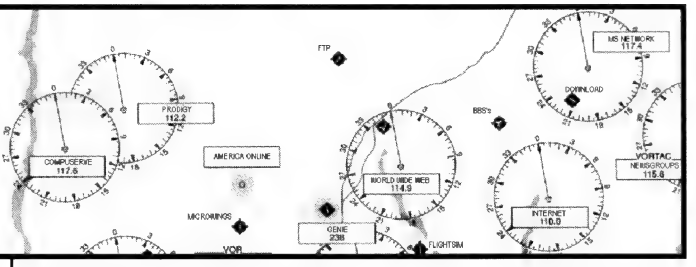


by Nels Anderson

It's hard to believe, but it was less than a year ago that an entire column was devoted to an introduction to the Internet. At that time the Internet was still new to most people. What a difference just a few months make though! It's become almost impossible to avoid at least hearing about the 'Net. My local newspaper devotes a segment to it every week while many magazine and newspaper advertisements now include Web site addresses to visit for more information on the advertised product. While not having access to the Internet is hardly fatal, there are now many interesting sites popping up there. With this column we will start visiting some of the better ones that have either a flight simulator or real world aviation emphasis. Remembering Web addresses ("URL's") is hard. Though each site's full address will be listed in the article, just remember that you can find links to all of them from the MicroWINGS web page (http://www.microwings.com) or from my personal Web page (http://www.ultranet.com/~nels).

http://e-flight.com/e-flight/

The E-Flight Center, sponsored by the FAI Group Inc., is a large site primarily oriented towards flight sim users. It also has sections on real world aviation including news and general information. Plus it has "The Pilot's Lounge", a nice feature not found on many Web sites, which we'll describe. The starting page offers access to all the Center's areas, which include News, Aircraft, Sims, Lounge and World. Graphics are colorful and generally clear without being overly large. Of course, if you have a slow connection you might want to disable graphics altogether, but if you do you'll miss much of what the site has to offer on its inner pages.

The News section is primarily real world aviation news, though any breaking flight sim news is covered too. For example, on the day I last visited news items included Microsoft's purchase of BAO along with news of the blizzard closing northeast U.S. airports. The section appears to be updated frequently, but older news items are left available too.

The Aircraft section appears to still be under construction. It offers exterior and cockpit photos of selected aircraft along with detailed specifications. The current aircraft selection is small, but includes interesting planes such as the 747-400. More listings are likely to be added in the future.

The Sims section is actually the start for additional sub-sections. Most popular civilian aircraft sims are covered, including FS5, ATP/3DAGS, Flight Light plus other software such as Tower and Flight Sim Flight Shop. Most of the sim pages start with detailed descriptions of the sims. Screen shots, features lists, and system requirements are all covered. These will be very helpful for anyone considering a new piece of sim software. The Sims pages interlink where appropriate. For example, the section on FS5 links to the Flight Shop section which links to a selection of downloadable Flight Shop aircraft.

The World section is a link to sites outside E-Flight. A large list of other flight sim related sites is available. Also included is an airport lookup feature.

The final feature of the E-Flight Center is the Pilot's Lounge. This is something you don't often find on Web sites: a section that allows two-way communications. Most Web sites are essentially electronic magazines, but the Pilot's Lounge is a message area, similar to what you'd find on a traditional BBS. Though not quite as easy to use as a BBS message conference, the lounge is logically set up and not difficult to navigate. The starting point is a list of message subjects. Just click on the highlighted subject to read the message. Follow up messages are shown too, indented from the main message. Thus following threads is simple. The current version of the Pilot's Lounge is a new feature but it's already quite active. It's a great addition to what is already a large and interesting Web site.

The E-Flight Center offers a lot of interesting material, certainly more than most people will be able to read in a single visit. That, along with frequent updates and the constant activity in the Pilot's Lounge make the E-Flight Center a place worth visiting frequently.

http://www.avweb.com

The AVweb site, run by the AVweb Group, is another large site run like an online magazine. This site is general aviation oriented, so while you won't generally find anything specifically about flight simulators you will find a lot of news and articles that will help make your simulation experience more real.

AVweb, also known as "The Web Site For Aviators" is free to use, but does require that you fill out a short form and obtain a logon name and password. Once you've filled out the form once you can use AVweb as much as you want. AVweb's costs are paid for by a number of commercial company sponsors whose advertisements you'll see on some AVweb pages.

Once signed up you start, just as you would with a printed maga-

The MicroWINGS List Of BBS's That Specialize In Flight Simulators

Region	Phone Number	Name	Location	Sysop
N. America	609-241-1436	The 32 Bit Bus	Logan Twp, NJ	Bob Bernstein
	708-395-5140	Airpower	Antioch, IL	Paul Dugenske
	703-242-3520	A.T.I.S.	Vienna, VA	William Downing
	714-362-8299	Check Six BBS	Orange County, CA	Patrick Gost
	817-355-9252	Contrails BBS	Euless, TX	Joe Richter
	619-442-2466	Elec. Flight Group	San Diego, CA	Ian Radcliffe
	800-645-3736	FAA Flight Standards	Orlando, FL	Bill Hoenstine
	905-642-2993	Flight 642	Richmond Hill, ONT	Bruce Forbes
	703-729-5728	Flightline BBS	Ashburn, VA	Robert Orsino
	612-544-5118	FlightLine BBS	Plymouth, MN	Craig Peterson
	714-521-5811	Flightline! BBS	La Mirada, CA	Greg Peters
	312-286-7870	The Flying High BBS	Chicago, IL	Gregory Zonsius
	918-251-3160	Fox One BBS	Broken Arrow, OK	Bill Rogers
	770-920-6682	Hanger Deck BBS	Douglasville, GA	David Waits
	312-881-1142	Jim's FlyInn BBS	Chicago, IL	James Williams
	713-440-7364	Linx BBS	Houston, TX	Joe Lincoln
	703-978-7929	National Archives	Springfield, VA	Ed Gibson
	403-463-7662	On Your Six	Edmonton, Alberta	Brendin Emslie
	714-525-1706	Orange Cty. Data Ex.	Fullerton, CA	Bob Johnstone
	416-296-9941	Pilot Lounge BBS	Toronto, Ontario	Gavin Steiner
	305-221-1571	Rambling Roots	Miami, FL	Barbara O'Keefe
	619-673-4016	Ready Room [SAN]	San Diego, CA	Andy Millon
	617-224-0033	Squadron Command BBS	Wakefield, MA	Ed Grossheim
	219-763-0826	Stalag 13	Portage, IN	Keith Heitmann
	407-831-9130	Treasures BBS	Longwood, FL	Jim Daly
	619-729-2884	Wheel Werks BBS	Carlsbad, CA	Jeff Kratka
	508-788-6951	Xevious BBS	Framingham, MA	Nels Anderson
International	27-21-930-1909	Ground School BBS	Cape Town S. Africa	Nico Visagie
	31-20-6575833	KLM Airchips BBS	Amsterdam Netherlands	Hans Stoekenbroek
	31-79-314425	The FsFan BBS	Zoetermeer Netherlands	Piet Jan Boers
	32-3-4582618	Airborne BBS	Kontich Belgium	Luc_Henderieckx
	33-67-76-45-98	INFO-2	Beziers France	Patrice Bouissou
	34-3-2193452	Replicants Factory 1	Barcelona Spain	Efraim Bayarri
	34-3-589-3888	ABAFORUM	Barcelona Spain	David Llamas
	396 3081 9225	S.I.& M. BBS	Rome Italy	Felice Pagnani
	39-49-9200386	OSI OVERHEAD	Padova Italy	Enzo Gasparini
	41-61-9312405	Aviation BBS	Bubendorf Switzerland	Hajo Verheyen
	43-732-222662-4	Cyberdynamics Sys	Linz Austria	Gerald Aigenbauer
	44-342-717800	Airtel Remote Access	Copthorne W Sussex UK	Adrian Pop
	44-934-511751	The Hanger	Worle UK	Jason Hyland
	45-98152258	The Polar Link	Aalborg Denmark	Christian Sorensen
	46-36-121323	NewAge BBS	Jonkoping Sweden	Jonny Bergdahl
	47-22-567018	Thunderball Cave	Oslo Norway	Jon Orten
	49-241-603190	Aeronautics BBS	Aachen Germany	Ulrich Effertz
	49-6131-582639	The AirLiner BBS	Mainz Germany	Miguel Blaufuks
	49-2324-980202	Airborne Mailbox	Hattingen Germany	Christian Paas
	55-11-889-9677	Central Line BBS	Sao Paulo Brazil	Renato Fichmann
	358-0-2940865	Tuusula_SF	Finland	Jarmo Heinonen
	7-095-200-3651	Hijacker's Elite	Moscow RUS	Timur Belyaloff

Qualifications for Flight Sim BBS List: All US and Canadian BBS's on this list have been checked within the past three months to ensure they are still online. To qualify for the list the BBS must specialize in flight simulators and/or real life aviation. This means the BBS must have at least one active message conference devoted to flight simulation, either local or part of one of the networks such as RelayNet, FidoNet, etc. The BBS must also have one or more separate file areas for flight simulator files and must have at least 100 such files available. *[MW✈]*

zine, with the Table of Contents. AVweb sections include Newswire, ATIS (editorials), Safety, Airmanship, System (ATC/IFR), Maintenance, Avionics, Places, Products, Shopping, Classifieds, Brain-teasers, Weather, Database (airports/pilots/aircraft), Web Sites, and Sponsors.

Each of these sections include a large number of articles that fit under the section heading. Reading the entire AVweb will really run up your Internet bill (if you're not on an unlimited use account)! Lets look at what's found in a few of the sections.

News-wire includes capsule news reports, typically one or two paragraphs long. This section is updated frequently.

ATIS includes the AVweb mission statement along with general aviation related editorials. Past editorials are kept on hand for newcomers to catch up on their reading.

The Weather section includes an extensive set of links to external (not part of AVweb) weather services. Both general maps and aviation specific weather can be reached from here.

The Classified section is surprisingly large. Advertisements for a wide range of aviation products can be found.

Airmanship includes personal stories and articles on flying techniques. Sample articles include "How to Enter the Pattern" and "Sounding Like A Pro". Many of the flying techniques discussed here would be useful to simulator pilots too.

Under Products are listed things like a Windows logbook program, aviation charts and flight planning software any of which could be used for sim flying.

As you can see, there is a lot of material here. Many of the articles relate personal experiences of the author/pilot and some are quite fascinating. You'll find serious stories, humor, and many educational articles in the various sections. Any sim pilot wanting to learn more about general aviation techniques will find a lot of information here.

One additional feature of AVweb that deserves mentioning is that users are allowed to post follow up messages and questions on any article. This make AVweb interactive, something no printed magazine can be.

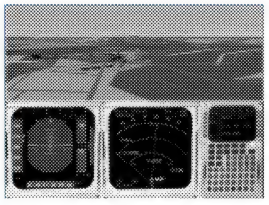
WHAT'S NEW:

Jim's FlyInn BBS (312-881-1142) now offers the Silver Xpress and Bluewave off-line mail doors for easier access to the message bases. For those who like a different interface, RIP graphics are now available.

The 32 Bit Bus moved to a new location as of November 5, 1995. Now located in Logan Township, NJ the new main phone number is 609-241-1436.

On Your Six BBS in Edmonton, Alberta has a new phone number as of September 1, 1995. They can now be reached at 403-463-7662.

About the author - Nels Anderson has over ten years experience in PC based communications. He runs his own system, Xevious BBS in Framingham, Mass. and maintains a Web site devoted to aviation and simulators. Nels also holds a Private Pilot's license. He can be reached on CompuServe at ID 71020,2613. [MW✈]



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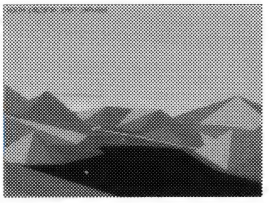

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SCENERY ENVIRONMENT SWITZERLAND is regularly flown by the world's leading experts in ATP development such as Hans Kiener (see review). Its developers include commercial pilots and one of the worlds leading experts on scenery design. See ATP scenery at its very best in Switzerland.

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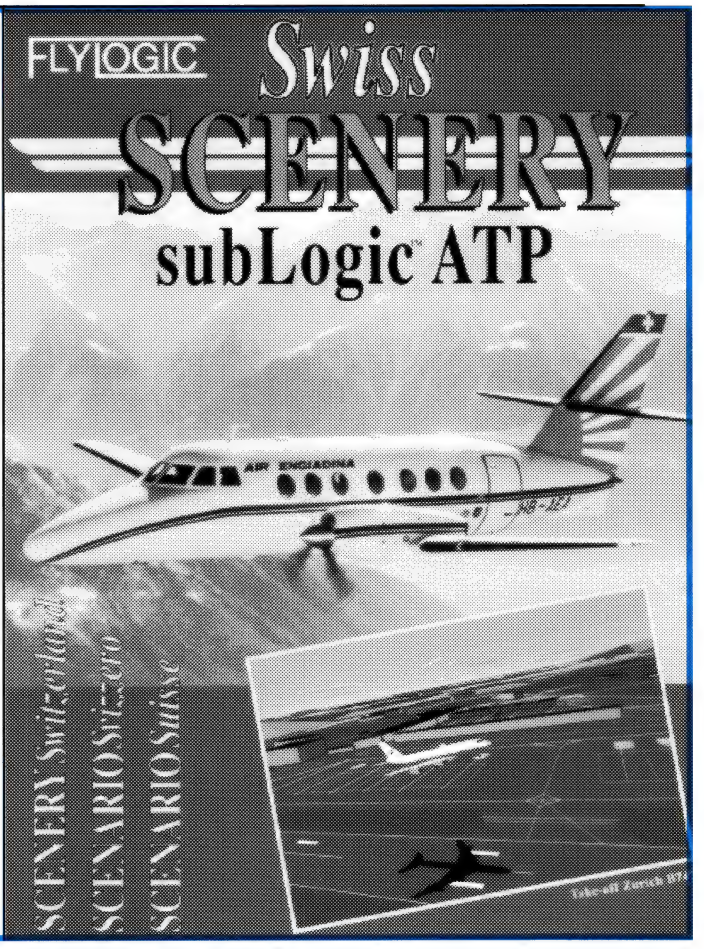

THE FLIGHT DECK
Simulating Airliners

Dealing With Winds

by Hans Kiener

Weather is probably the most important thing to pay attention to as a pilot. ATP by itself is somewhat unrealistic regarding environmental simulation and its influence on the aircraft behavior. Since I am not a currently rated pilot, I have to live with just my knowledge, common sense, and reports from people who do fly.

To discuss flying with wind and weather, in ATP, I picked my favorite: the B-737. I still like the analog panel, though in this case I would like to use the Glass Cockpit. It makes it easier to visualize the relationship between what the aircraft is doing and what the instruments are showing.

To get the B-737 equipped with the Glass Cockpit, it takes some tweaking with the configuration files of ATP Companion/3D-AGS. This of course is a compromise, since the Boeing Glass Cockpits do not look exactly like the ones on an Airbus. I consider it a legitimate option anyway. After all, this same compromise was done in 3D-AGS successfully with the B-767 of ATP.

To accomplish the above, you have to first backup all IALCFG*.ATP files. That way you have the option to go back to the analog cockpit at anytime. I chose to keep the name of the files, and just gave the backup files a different extension. Here is what I did step by step. First the back up:

```
CD\ATP [ENTER]
COPY IALCFG*.ATP IALCFG*.SAV[ENTER]
```

At this point I created a Batch File that will automatically change the B-737's analog cockpit to the Glass Cockpit at the time I start ATP:

Still at the prompt of the ATP directory I typed EDIT GLASS.BAT. The following shows the contents of this Batch file:

```
@ECHO OFF
COPY IALCFG82.SAV IALCFG81.ATP
LH ATP
COPY IALCFG81.SAV IALCFG81.ATP
MODE CO80
```

Whenever you would like to fly the B-737 with the Glass Cockpit and its advanced auto pilot features, you just have to type GLASS at the ATP prompt. If you chose to use the analog panels, just type the usual ATP command at the prompt. Since the batch file reverses the process automatically after you leave ATP, you will always get the original set of panels back. If ATP should crash during your flight, you just type GLASS to start ATP next time. It will restore the original set after you exit the program again. The last line of the batch file example just restores the color mode, and has nothing to do with the panels.

Caution, this is not a procedure documented by Nomissoft. Therefore you do this on your own risk. I presented it here because I consider the risk nil if you follow the above procedure properly.

Now, let us find out what wind does to our approaches and takeoffs. The main difference to real aircraft behav-

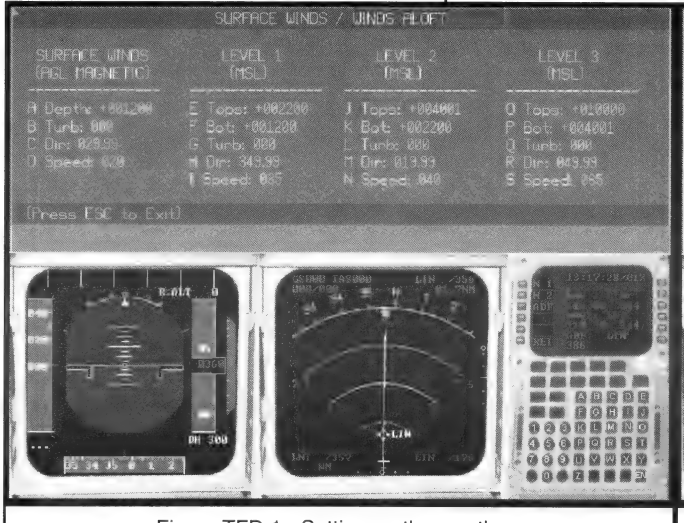

Figure TFD.1 - Setting up the weather

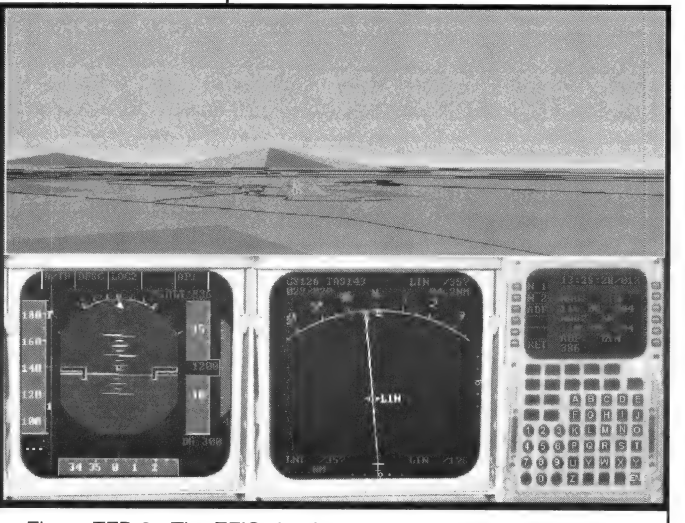

Figure TFD.2 - The EFIS clearly shows our crab due to the winds

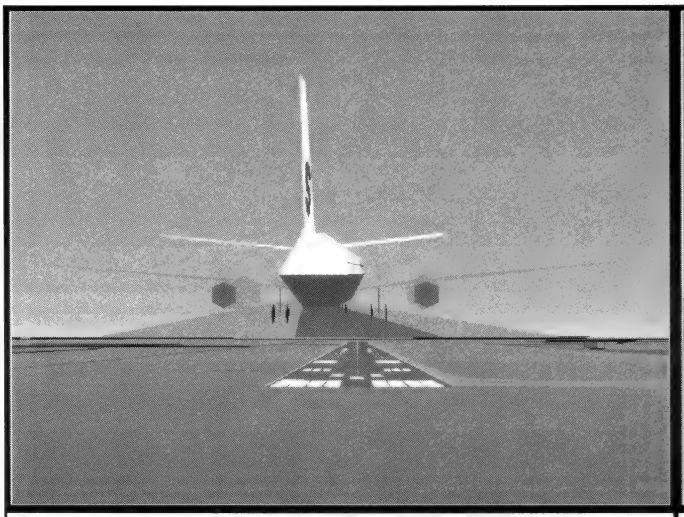

Figure TFD.3 - The aircraft's profile shows us compensating for wind

Figure TFD.4 - A more dramatic depiction of a crosswind approach

ior is actually on the ground, and especially upon liftoff or touchdown. ATP's planes seem to be like locomotives on the runway. Not even a 100 knot cross wind would get them to skid of the runway. As soon as they loose contact with the ground, they travel sideways at almost wind speed.

On takeoff there is not too much you have to do about this. Since ATC always clears you to a specific heading rather than runway heading you just need to correct for difference between the cleared heading and the runway's heading.

It is somewhat different for approach and landing. It is quite a challenge to stay on the runway upon touchdown during strong, shifting winds. This is because the aircraft shoots in the direction its nose points to, as soon as the wheels touch the ground. To keep lined up with the runway you have to point the nose into the wind, which causes the aircraft to fly slightly sideways down the glide path.

Figure TFD.1 shows the shifting winds I programmed for this approach. On the same shot you see the radios tuned to the frequencies of Milano Linate, which I consider an ideal case to show the position of the aircraft in such a case.

At this time the plane is in takeoff position on runway 36. As you can see, the lines on the EFIS are practically pointing straight ahead. This means the runway's heading is lined up between the LIN NDB behind us and the LIN VOR ahead of us.

Let's see how this looks like during the approach while keeping track of the localizer. At this point we have a winds of 20 kts at 30 degrees. Looking at the lines on the EFIS you can see how the aircraft flies sideways towards the runway. [See figure TFD.2]

As we get closer to the runway I took a screen shot from behind the plane, to show the aircraft's profile on the approach. [See figure TFD.3]

It gets even more obvious shortly before touchdown. If we would touchdown at an angle as shown in figure TFD.4, the aircraft would shoot directly for the taxiway to the east of the runway. There are two ways of handling this that usually work pretty well for me. One is to aim to the left of the center line, and correct aggressively with left rudder input upon touch down. The other possibility is to aim to the right of the center line, line up with the runways heading approximately at flare altitude and let the wind blow me to the runway center line. This often asks for a forced touch down, since it is hard to predict how far the wind will blow us before the wheels hit the ground. By the way, rudders work best for this maneuver rather than ailerons.

One of the most important factors regarding control-ability of the aircraft is directly related to the frame rate. I upgraded my system from a 486/DX-100 to a Pentium/133 with Pipeline Cache and a Mach 64 SVGA card. The difference is astounding. The program's response to control inputs is significantly smoother. This is most obvious (and needed) in turbulent conditions and in dense sceneries like USA East and West.

Though the simulation of weather conditions is not perfect, it certainly presents a challenge to try and cope with them. Your landings and skills on the controls will improve quickly if you keep practicing with windy weather conditions.

About the author - Hans Kiener (CIS ID 71045,1337) is a dental technician and lives in the Denver area. He immigrated to the U.S. from Switzerland and is always add in more features into his cockpit for use with ATP and FS5. ATP is his favorite program. [MW✈]

Review of...

Pilot's FSWG Hong Kong

As I sat down to begin writing this article on Pilot's FSWG Hong Kong scenery, I realized that I would be faced with quite a difficult task. Why? Well, because I have never actually been to Hong Kong, or anywhere overseas for that matter! So, since I can't write this article based on comparisons to real experiences, I've decided to approach it from the perspective of a scenery designer and that of a scenery enthusiast, since I do possess some knowledge in those fields.

For my review, I was supplied with the 3.5 disk version that was very nicely packaged complete with photos, a map, approach plates, and very easy to understand instructions. Just as this review was going to press, I received an update with information on the current version which is published on CD, that contains many other enhancements that I'll talk about a little later.

Installation was a snap! Two languages (English and German) are supported for the installation process, which walks you step by step through your directory selections and hard drive assignments. Upon completion of the installation, you simply start FS5 and activate the Scenery through the Scenery Manager just as you would with any other 3rd party scenery file.

You'll then find "Hong Kong" under your World Airports menu with options for the airport of your choice. If you don't like starting from one of the assigned airports, then you might find some great starting points through the situation files that are supplied with the package.

The situation files highlight some of the not so obvious details that you will find throughout the entire Hong Kong area.

AIRPORT FACILITIES

Landing at Hong Kong's city-centre Hong Kong International Airport (previously called Kai Tak Airport) is an unforgettable sightseeing experience by day or night. All flight paths provide scenic bird's-eye views of Hong Kong's green islands, sandy bays and harbor-side forests of skyscrapers, homing in on an airport runway that stretches dramatically into Victoria Harbor. A new dual-runway international airport, planned to open in early 1998, will lie off the northern coast of Lantau Island (Hong Kong's largest island), but for now, airline passengers are blessed with one of the world's most convenient city-centre airports. Kowloon's hotels are only a 20 to 30 minute ride away, and hotels on Hong Kong Island take just 35 to 45 minutes to reach via one of Hong Kong's two cross-harbor tunnels.

Stefan Schaefer and the folks at FSWG have done an incredible job of recreating the airport environment. The detailing that you will find during your exploration of Hong Kong's International airport makes you fell like you are on a treasure hunt. Some of the special features that you will notice in the immediate airport environment includes the runway lighting that changes color and intensity based on several factors such as your heading towards the runway as well as your altitude. After landing, you should be pleasantly surprised to find a complete visual docking system to aide you in lining up correctly to dock with the jetways at the terminals.

While taxiing to the runway or jetway of your choice, you will notice the appropriate (and accurate) runway and taxiway signs. Fully operational windsocks and radar dishes complement one of the finest re-creations of an airport's environment that I have seen to date.

One of the things I would have to say, is that what I appreciate the most about this scenery is some of the wonderful hidden

Figure HK.1 - Fireworks explode at night over the bay

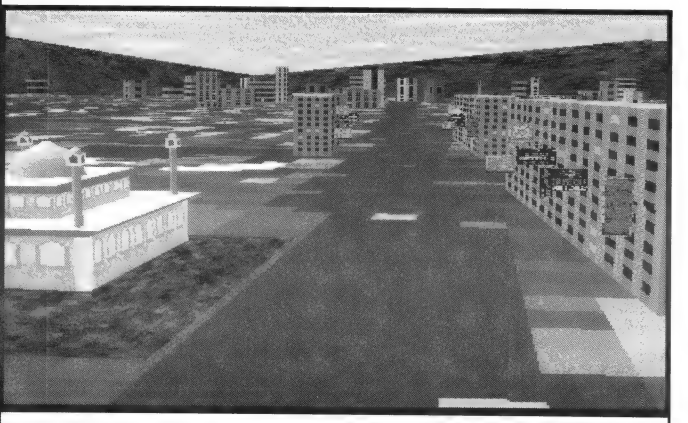

Figure HK.2 - Low-level flying around Hong Kong

Figure HK.3 - The Hong Kong Bay area with 'glass' buildings

Figure HK.4 - Making the famous 'checkerboard' approach

programming tricks that Stefan has accomplished. You'll notice for example is that if you place yourself at Kai Tak, your ATIS frequency is tuned for you and that the ATIS advises you of the appropriate weather, localizer frequencies and active runways for your flight.

You will also notice a beautiful fireworks display over downtown Honk Kong at midnight, but by far, the nicest feature from a pilot's perspective is the Jetway docking system. A fully functional docking system that supports the 707, DC-9, and 747 series of aircraft will guide you appropriately if you are too far to the left or too far to the right, and also illuminate to alert you when you have reached your stopping point.

While flying around Hong Kong and the harbor, you'll readily notice some texture mapping on buildings that rivals some of the wonderful work done by MicroScene and BAO. Stefan makes a brilliant use of sky textures on some buildings to create the illusion of a reflecting surface that is so real that I had to slew my aircraft in front of it to make sure I wasn't going to see myself!

Yet another notable texture is the "Checkerboard" sign on the side of a mountain seen on the challenging approach to runway 13 at Hong Kong International. This runway involves a curved final approach between the Middle Marker and the end of the runway due to a mountain being in the way of a straight in approach. The mountain has a large checkerboard on it to let pilot's know when to begin the turn. Even the strobes are curved! Oh yes, and don't forget to take a look at the radar screens located in the Tower at Kai Tak!

As I mentioned earlier, the current version comes packaged on CD-ROM and includes a copy of Georges Lorsche's shareware version of "Final Approach", along with a copy of all of the approach plates to Hong Kong. You will also find a preview of Pilot's newest scenery project "Madrid" which will be released shortly. And last but not least, as an added bonus, you will find actual recordings of air traffic control from Hong Kong International.

The cost for this newest CD version is $34.90 US plus shipping and handling, or $29.90 US plus shipping and handling for the disk version. If you already have the 3.5 disk version of 1.0, then you may upgrade to the current version for only $15.00 US plus $2.00 shipping and handling. Address and phone numbers for Pilot's is listed in the Commercial Member directory near the back of the magazine.

ILS Approaches Included

Freq.	Crs	ID	Name
111.90	88.0	I-KL	Hong Kong IGS 13
109.90	315.0	I-HK	Hong Kong ILS 31
111.30	154.0	I-QJ	Shenzheng ILS 15
110.70	334.0	I-MH	Shenzheng ILS 33
110.30	29.0	I-FO	Guangzhou ILS 03
109.50	209.0	I-QX	Guangzhou ILS 21

About the author - Bill Higgins Jr. Is a member of the CompuServe FSFORUM Staff, and has been a Flight Sim enthusiast since FS3. He excels in Scenery Design and problem solving. Bill also holds a Private Pilot's License and is Instrument rated. He can be reached on CompuServe at ID 73177,3106. [MW✈]

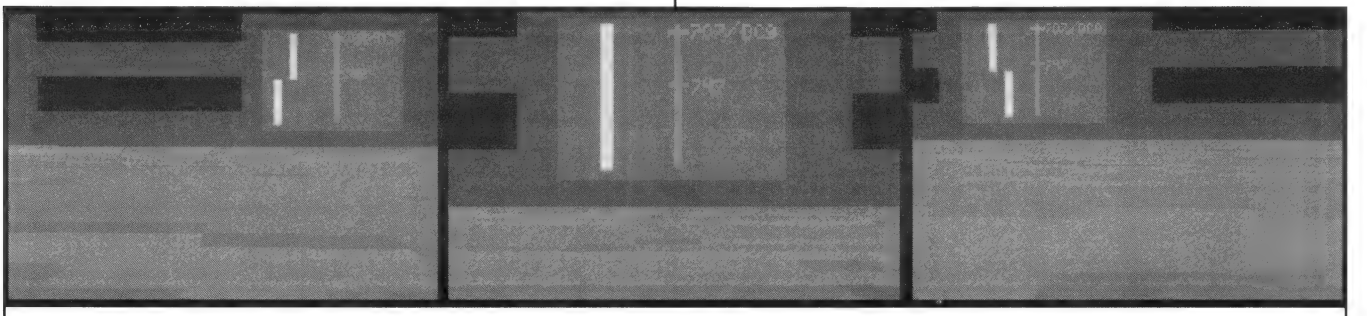

Figure HK.5 - The Gate-Docking system: (left-to-right) Left of the gate; Lined up perfectly; Right of the gate

CALLBACK

From NASA's Aviation Safety Reporting System

Callback covers actual safety related situations and is reprinted with the permission of NASA's Deputy Manager for the AMES Research Center. Many of the incidents reported to ASRS can be applied to computer based flight simulations through re-enactments and/or preventative training and education.

Navigation Mishaps

Bird strikes are a common occurrence at this time of the year, due to heavy migratory activity. In our first report, a general aviation pilot belatedly figured out how to "duck" bird strikes:

Entering downwind... in a nose-high attitude to slow for gear extension. At 800 feet AGL, a flock of about 20 ducks came into view, rising. I started evasive action. The flock scattered and we impacted multiple ducks. One duck shattered the windscreen and ended up in the back seat. Headsets were knocked off, eliminating communication. Added power to maintain airspeed... gear extension on final, no flaps... landed without incident. No injuries. Due to nose-high attitude, I had no view of the ducks rising from below me. Loss of communication was very unsettling. When the windscreen came out, [there was a] major airspeed loss. It would have been very easy to stall at 800 feet AGL. Even more power was needed when the gear was extended.

As a partial remedy, the reporter suggests slowing gradually and keeping the nose low to improve visibility. Turning landing lights on during final approach may also help birds see and avoid aircraft.

...and Gadgetry Notes

FAR 91.171 requires VOR units used for IFR flight to be checked for bearing error within the preceding 30 days. As this reporter learned, even for VFR flight, an accurate VOR receiver can be critical.

In cruise, approaching XYZ VOR, Center asked if we showed on course. The FMS showed us on course. We checked the VOR coordinates and they were correct. Upon switching to the [VOR] radio, we realized that we were left of course. Center told us that, if we continued on our course, we were going to pass west of the VOR by about 13 miles, instead of passing over it. Center then gave us "direct [intersection]". We used the FMS to go direct and checked the coordinates in the FMS, which were correct. Then the aircraft turned too far to the left. We went back to the radio and intercepted the XYZ arrival. We checked the FMS again, and it indicated that we were 7 miles right of the course. [With help from Center], we continued inbound and landed. We asked the Flight Attendants if anyone in the cabin was using some type of electronic equipment. They said that there were several people playing electronic games.

The navigation error could have been caused by the portable electronic devices in the passenger cabin, or by a malfunction or calibration error in the FMS. Normal operating procedure is to verify FMS information with any other operational systems, such as VOR or DME. *[MW✈]*

Now available
FSWG HONG KONG
Enjoy the most spectacular sights of Hong Kong with a new scenery enhancement for Microsoft Flight Simulator version 5.1!
Test your skills while flying the breathtaking Checkerboard Approach into Hong Kong Kai Tak Airport!
Discover the night life of Nathan Road with stunning new type of night scenery!
CD-ROM version includes soundfiles with real recorded Hong Kong ATC, precompiled adventurefile for use with BAO Flight Simulator Flight Shop, Final Approach shareware version with approachplates of all included airports and more
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Consolidation In The Flight Simulator Industry

by Bruce Artwick, Chairman, BAO Ltd.

I usually write about technical issues in this column, but in light of recent events, it's appropriate to examine the business side of the flight simulation industry and the profound effect it will have in the future.

The recent events that I'm referring to are the wave of acquisitions, wild valuations swings, and general volatility in the consumer entertainment software field. subLOGIC was acquired by Sierra, most of BAO's assets were sold to Microsoft (BAO still exists, but no longer owns Microsoft Flight Simulator and its other FS products, and has minimal staff). The Flight Unlimited team seems to have disbanded to a large extent and Papyrus (Indy Car and NASCAR Racing) was acquired by Sierra. Stock prices of companies like Spectrum Holobyte, Broderbund, Electronic Arts, and Sierra are gyrating wildly, with one having gone up 600% only to come crashing down and losing 60% of its value. What's going on here? Why is all this stuff happening all at once?

The answer, I believe, lies in excessive optimism and valuations in the microcomputer software industry, solidification of a the small producer / large publisher model of doing business, and the high cost of developing new titles.

The hype and frenzy surrounding Windows 95, Multimedia, and the Internet have caught the eye of the man on the street as well as the investment community who have bid up the prices of software companies. In 1995, there were approximately 300 small software companies sold. The going rate was 1 1/2 to 2 times revenues, which is almost twice what these companies could have been bought for a year ago. Company owners realized that with competition increasing, the cost of making products going up, all the liabilities of owning a business these days (excessive government regulation, red tape, taxes and exposure to law suits), and such high valuations, the smart move was to take the money and run.

Since the early days when I founded subLOGIC in 1977, it was unclear what the ultimate business model for microcomputer software would be. Would it be like book publishing where many private authors sold "manuscripts" to large publishers and everyone would rush out and buy "Tom Clancy's latest Spreadsheet"? Would it be like the movie business where software superstars working under contract for large "studios" would have their names in bright lights and everyone would rush out and buy the hot new "software starring Demi Moore"? Or would it be a more corporate model where bullpens of programmers slaved away to make the latest "Acme Word Processor"? Over the last couple of years, the answer has finally emerged. For business and system software, the bullpen of programmers making the Acme Word Processor is the norm. For entertainment software, one to ten-man shops are working as "producers" and large companies like Microsoft and Electronic Arts are acting as "publishers". Large publishers do have some internal development staff, but most is used to produce tools and "engines" (3D graphics, sound, interfaces) for the small producers to use.

Where does this leave the 30-100 man shop that does it's own development (but can't offer the high salaries and benefits of the big guys or the very small entrepreneurial atmosphere of a 5-man company), and does its own production and marketing (but can't get the distribution channels and economies of scale of a large publisher)? It leaves them these options: Shrink before you sink, struggle along and hope to break even, go for broke and try to grow to be a 500 to 20,000 employee company, or sell to one of the major players. The most appealing choice, unless you are a big gambler is obvious.

Finally, programs are getting much more complex and expensive to produce. The FS5.0 project (just 5.0, not 5.0a,b, and 5.1) at BAO took about 23,000 man hours of BAO time alone, not including many thousands spent by Microsoft. In this business, if you can run at $50 per man hour including all overhead you are doing quite well. As you can see, a major revision or new title can cost a million dollars at least, and many major new titles by large publishers that aren't as efficient as small shops, can cost 3-6 million. If your title is a hit, you get a fantastic return on your investment, but if you're a small shop and only sell 20,000 units of your title and it's the only one you have - you're dead. Only the truly adventuresome or truly naive like playing in this environment.

Where will this all lead? I believe that we have entered a period similar to the early days of the automobile where there were a couple hundred US manufacturers making simple cars. Consolidation occurred and we ended up with just three major US companies and many small niche companies. The cars of today cost a couple of billion dollars each to develop and tool up, but the consumer gets tremendous sophistication and product for the money due to economy of scale. Over the next few years I see similar consolidation happening in the entertainment software area. For a while there will be lots of companies working very hard and not making much money, and ultimately a shake-out will occur resulting in a few dominant producers, but in the end, the consumer will be the winner and will get very sophisticated products at a very low cost. Many of these products may be disappointments for true enthusiasts however due to some of the "common denominator" mentalities of anything designed for mass consumer appeal.

For serious flight simulation fanatics, like many of you MicroWINGS people are, watch the action in the niche areas. This is where the fun will be.

[MW✈]

Review of...

TekMate's Virtual Aerobroker Hangars

While BAO's new Flight Simulator Flight Shop add-on was still under construction, Joe Lincoln, the self-described "owner/janitor" of TekMate Computer Software who has been serving the PC-based flight simulation community since its infancy, began making plans to provide FSFS users with a tremendous variety of outstanding aircraft to fly. To date, he has recruited five expert aircraft designers — Russell "Rush" Mueller, John "Video" Kelley, Craig "Muck" Mosher and his brother, Steve, and DataWings' Gene Lacy — to sell their creations through TekMate. Collectively, this small group of highly-skilled designers are known as the "Virtual Skunk Aerobrokers."

All "VSA" aircraft feature highly accurate, realistic flight modeling as well as body designs which many could describe as digital works of art. This is not surprising when one considers the experience, talent, and dedication of their designers.

About The Designers

Ever since his early childhood, **Russell Mueller** has always been fascinated by airplanes. He became an avid flight simulation hobbyist in the early 1980's, flying subLOGIC's Flight Simulator II on his Atari 800. After a few years of building and crashing radio control planes, he decided it was much less traumatic to design planes for Microsoft Flight Simulator, and became engrossed with Mallard's Aircraft & Adventure Factory for Microsoft FS4. At that time, he designed a popular collection of shareware planes called "RUSSAIR." His favorite AAF creation was the Rutan Voyager, for which he received permission from Dick Rutan to duplicate and release as freeware. Rush also takes great pride and pleasure in designing prop-powered tail draggers, and his first VSA designs were a collection of aircraft from the Golden Age of Air Racing. When he's not designing airplanes, he works in a materials science research lab where he puts his Master's degree from Stanford University to good use. Rush has been a Staff member of CompuServe's FSFORUM since November 1994, and is the designer of the FSFS Ultralight and the author of the Balsa Workshop help file in BAO's FSFS.

Gene Lacy has been in and around planes for most of his life. "I grew up in the back seat of several Cessnas that my dad flew for my grand-dad's company back in the nifty fifties. Our planes were based out of Houston International (now William P. Hobby) Airport. Many, many evenings found me hanging around the old original terminal building

Hangar 01 - "The Golden Age of Air Racing Vol 1" by Russell Mueller
Laird Super Solution, Miles & Atwood Special, Wedell-Williams #44, Travel Air Mystery Ship, Gee Bee R-1

Hangar 02 - "The Boeing Family" by Craig Mosher:
727-200 Northwest Airlines, 737-300 USAir, 747-400 Canadian Airlines, 757-200 Continental Airlines, 767-300 American Airlines, 777-200 United Airlines

Hangar 03 - "De Havilland Delicacies" by John Kelley:
Otter, Twin Otter, Dash-7, Buffalo, Beaver

Hangar 04 - "4-Prop Classics - Commercial" by Gene Lacy (DataWings):
Super Constellation, Electra L-188, Douglas DC-6, Boeing 377 Stratocruiser, Boeing 307 Stratoliner

Hangar 05 - "4-Prop Classics - Military" by Gene Lacy (DataWings):
Avro Lancaster "Miss Fit", B-29 "Enola Gay", B-17 "Texas Belle", C-130 Hercules "Tiger Bird", B-24 Liberator "Just 4 You"

Hangar 06 - "The Airbus Family" by Craig Mosher:
A300-600 Federal Express, A310-200 KLM, A320-200 British Airways, A321-100 Austrian Airlines, A330-300 Aer Lingus, A340-300 Lufthansa

Hangar 07 - "Video's Favorites" by John Kelley:
Canadian SnowBird Jet, T-34 Mentor, C-47 Skytrain, Avro Lancaster Mosquito

Hangar 08 - "DASH-8's Around The World" by John Kelley:
DASH-8-100 (Canadian Regional; Air Ontario; British Airways; Hamburg Airlines; Horizon Air), DASH-8-300 (Sabena; SA Express; Tyrolean Airways; USAir Express; Wideroe)

Hangar 09 - "Lockheed, Douglas, Fokker" by Craig Mosher:
DC10-30 American Airlines, Fokker 100 USAir, L1011 Tristar TWA, MD11 Swissair, MD80/82 Alaskan Air, MD90 Delta Airlines

Hangar 10 - "Airshow!" by Russell Mueller:
Bob Hoover's P-51D, Pitts Special, Super Stearman, J-3 Cub, Bede 5J

Hangar 11 - "Boeing B727/B737" by Craig Mosher:
B727-200 (American; Continental; Delta, United; Iberia), B737-300 (Southwest; KLM; Continental; United; Lufthansa)

Hangar 12 - "Regional Props & Jets" by John Kelley:
Saab 340B USAir Express, Shorts 360 Jersey European, Avro RJ85 Crossair, Canadair RJ ComAir, DASH-8-100 Northwest Airlink

Hangar 13 - "BOEING B757/B767" by Craig Mosher:
B757-200 (British Airways; Northwest; Delta; American; United), B767-200 (ANA; British Airways; Canadian Airlines; United; Delta)

Hangar 14 - "Peacekeepers of the Nuclear Age" by Gene Lacy:
Boeing B-52 Stratofortress, Convair B-58 Hustler, Boeing B-47 Stratojet, Convair B-36 Peacekeeper, Rockwell B-1B

Hangar 15 - "Learning To Fly" by Steve Mosher:
Cessna 152, Piper PA-28 Cherokee Warrior, Piper Malibu Mirage, Cessna 414A Chancellor, Beechcraft 1900C Airliner

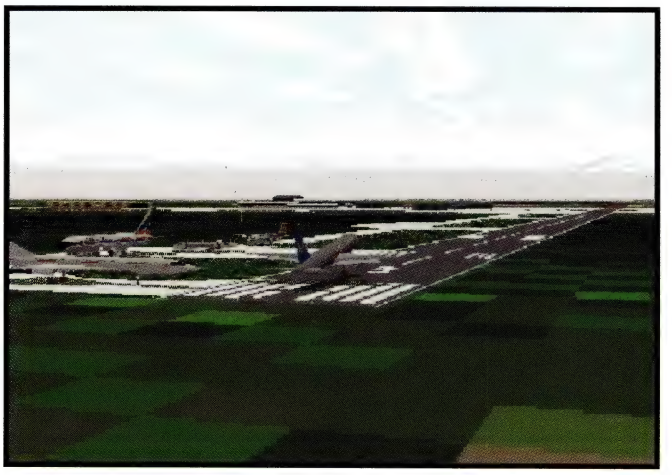
Hangar 16 - "Regional Jets - North America & Europe" by John Kelley:
Canadair RJ (Air Canada; Air Littoral; Lauda Air; Lufthansa CityLine; Sky West), Avro RJ85/BAe (Jersey European; Manx Airlines; Meridiana; TNT International; United Express)

Hangar 19 - "Collector's Edition - MACH 1 PLUS" by Gene Lacy:
British Airways Concorde, Lockheed SR-71 Blackbird, Lockheed F-117 Night Hawk Stealth Fighter, X-15 Experimental Rocket Plane, Piper PA-34 Seneca II, Vickers Viscount 800

admiring the DC-3's, Connies, DC-6's, and eventually the screaming Boeing 707's and Delta 880's. No doubt this greatly influenced my development of the '4-Prop Classics' that I designed for Flight Shop under my home business name of DataWings." Gene learned to fly on instruments before he learned VFR flight on account of one simple fact: he was too little to see over the instrument panel! "My dad would just tune in the VOR and assign me a radial to follow." In 1981 Gene obtained his private ticket. Today he lives outside of Houston, Texas and has been working for Texas Instruments for the past 23 years. His aviation and technical background gave rise to a natural interest in PC-based flight simulation—he traces his first FS excursions to Microsoft Flight Simulator version 2 back in 1987. The Aircraft and Scenery Designer (ASD) and Aircraft and Adventure Factory (AAF) add-ons for FS4 prompted Gene to explore his creativity. He designed scenery for Pearl Harbor and Texas, and later constructed the Boeing B-17 and PBY Catalina with AAF. Most recently, he participated in the Flight Shop development cycle and was asked to apply a Caribbean-style paint scheme to John Kelley's DC-3 design. "By the way, it is not a duck, it's not a chicken. It's a sea gull!"

Craig Mosher is an architect with WHW Group in Halifax, Nova Scotia, Canada. His brother, fellow "Skunk" Steve Mosher (who I was regrettably unable to speak with before this article went to press), introduced Craig to Flight Simulation in the late 1980's. Craig was hooked instantly by the intense visual and 3-dimensional problem-solving required to fly and navigate the simulated airplane. What's his favorite type of plane? "I've always been drawn to commercial airliners... I love the sights and sounds of a busy airport. ATP captured my attention for a year or so, but I came back to FS4 when it became possible to design airliners with AAF. Making airliners became my number-one interest, and provided me with an opportunity to give something back to the hobby in a meaningful way." Craig's first FS4 project was an Air Canada 767. It was well-received by fellow enthusiasts on the FSFORUM, which eventually led him to develop other commercial transports including the Delta L1011, which was his first joint effort with Hans vanWyhe. Hans later introduced Craig to the people responsible for developing FSFS, and Craig was eventually invited to join the alpha and beta testing teams responsible for evaluating the Aircraft Factory portion of Flight Shop. Although Craig is pleased with all of his VSA creations, his Airbus A-330 has special significance for him. "It was the project through which I developed all of the techniques I used in subsequent projects, including the Northwest 747 which shipped with FSFS."

John Kelley's interest in aviation dates back to his pre-teen years before World War II. He started flying sailplanes in 1957 and received his single-engine license in 1965. By the time medical reasons forced him to give up flying in 1977, he had amassed 600 hours in gliders and 500 hours in single-



engine planes, most of which were tail draggers. About ten years later, John jumped into the virtual left-seat and began flying Flight Simulator II on his Commodore 64. In 1989, he migrated to the PC and bought AAF as soon as it was released. He's been designing planes ever since. The Avro Lancaster was his first AAF design, and John also recalls the challenge of trying to get his AAF Otter's floats to look realistic when the plane was in the water. When John isn't designing planes, he spends time watching and photographing airliners and also enjoys railroading, birding, and equestrian sports. John's favorite VSA creation is his Dash-8, "which explains why I have made so many of them....but the one I have just finished is always the one I like best!"

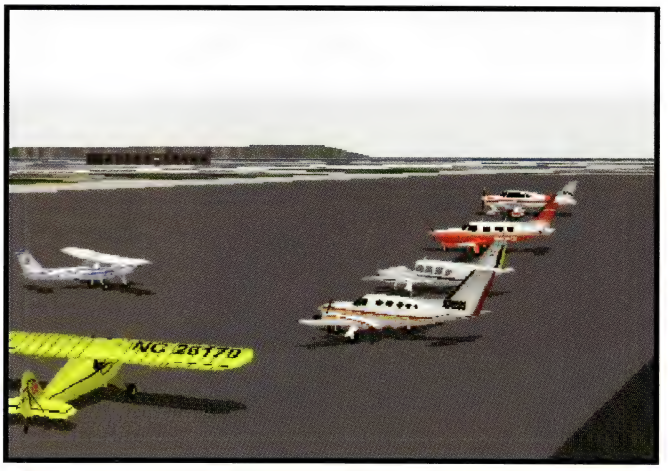
VSA aircraft are sold in "Hangars" — groups of five or more planes which all share a common theme (see sidebar). As each new Hangar collection is released, Lincoln makes preview photos and documentation files available on the TekMate BBS, the FSFORUM, and other online services. The aircraft collections themselves are available for $15 each and may be purchased and downloaded online via the TekMate BBS.

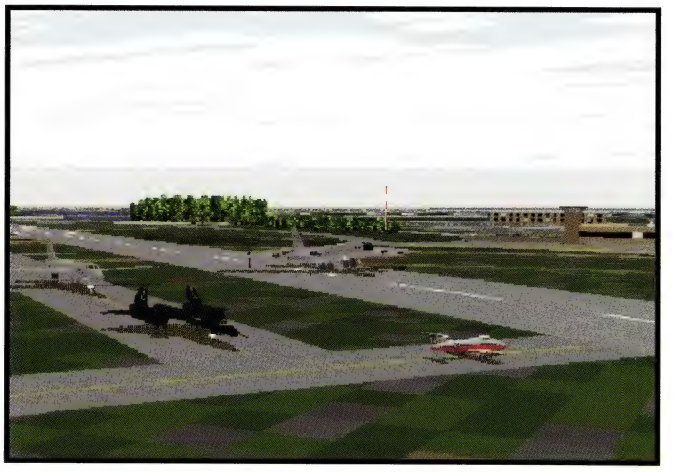
I spoke with Joe Lincoln briefly in the course of preparing this review and he emphasized TekMate's commitment to customer satisfaction. "We are very privileged to be associated with these great designers. Our job is to make absolutely certain that every customer is happy and satisfied with their purchase. We will continue to do everything imaginable to make sure that no one — ever — has a bad experience dealing with TekMate. I take this as a very personal obligation."

TekMate's On-line ordering and downloading BBS can be reached at (713)440-7033 [8N1, 9600/14400]. Voice orders are taken at (713)440-5542 (9:30AM-4:30PM CST). Fax orders can be made to (713)440-5669. You can access the TekMate web page from MicroWINGS' Cool Webs section at http://www.microwings.com.

I leave you with a set of flight photographs which cover a broad cross-section of VSA collections and high-light some of my own personal favorites. Since enough aircraft were available at the time this article went to press to fill several entire MicroWINGS magazines with photos, I developed a new "composite" photography technique which allows several aircraft to be placed in the exact same scene while preserving perspectives and light sourcing. I hope you enjoy the results!

About the author - Michael Fisher is an Assistant Sysop on CompuServe's FSFORUM, and guides the forum's general aviation simulation discussions and organizes its Fly-in electronic teleconferences. He is a practicing attorney in Washington, D.C. and can be reached on CompuServe at 70244,1477. [MW✈]





Ask Dr. Sim

Q When I try to create a flight plan under Flight Shop's ATC Workshop, it always tells me that my waypoints are only 0.0 miles apart. I even tried LAX to JFK (all the way across the USA!) Is my copy of FSFS bad or do I have something setup wrong?

A The problem is that your CONFIG.SYS file does not have the SHARE statement in it, or if it does, the value set for it is too small. Try using a setting of SHARE /L:25. If this still happens, then increase the 25 to larger number. This problem has only been observed on Windows 3.1 systems.

Q Any flight plan I try to upload, using Flight Shop's ATC Workshop, ends up with a message saying something to the effect that I have too many waypoints. This even happens with just a departure airport, one waypoint, and the destination airport. It also happens with the canned flight plans. Help!

A This problem is caused by the same culprit as in the question above. To solve it, increase the number of locks in the SHARE line of your CONFIG.SYS file. See the above answer for more on SHARE and this problem.

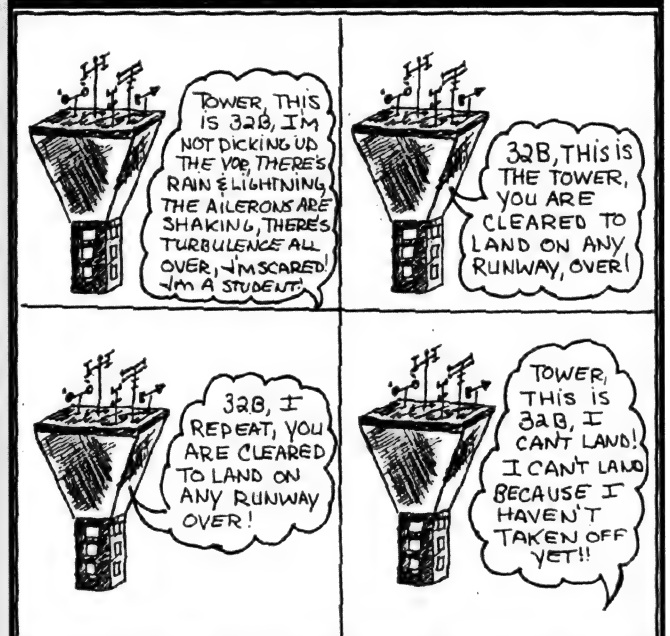
Q I am new to the Internet, but 'am having a ball checking out all the wonderful information available on WEB pages (by the way, your MicroWINGS web page is absolutely the hottest I have seen for flight sim nuts like me). I have a problem though, when ever a web page has links to an FTP site, more times than not, I get a message basically saying that the file could not be obtained. I have tried various browsers, IE, AOL, CIS, etc. The only one that works is Netscape's. Why?

A FTP sites provide information to browsers in a predefined format. Depending on the operating system being used at the FTP site, the information provided may not exactly match the format expected by the browsers. Netscape's is the only we have found that seems to be able to work with any FTP's operating system. We have heard that IE (MS's Internet Explorer) is working on a fix for their browser. If you do not want to switch browsers (or can not), you can try accessing the FTP sites with an FTP program rather than with a WEB browser.

Q I like flying the 'heavies' that Flight Shop's appearance on the market has allowed us. But, when flying ATC Workshop adventures, I find that I need much more time/room to navigate the turns issued by ATC as they try to get me vectored around to the landing runway. How do I get ATC to vector me from further out, thus giving me more time to make my turns?

A You can adjust the distance of the pattern ATC guides you around in, by altering some of the values in the FSFSADV.INI file (found in the Flight Shop directory). Using a standard text editor (such as DOS's EDIT.COM or Windows' NOTEPAD.EXE), open up the FSFSADV.INI file. The first thing you need to do is edit the variables VFRAppDist and IFRAppDist (found in the [Variables] section of the file). Change these variables to read VFRPatDist and IFRPatDist. Next, increase their values to a larger number. The number represents the distance in miles from the ***center*** of the airport (as defined by the location in the Airport's database) at which ATC will start vectoring you. The default values are good for props like the Cessna, but are admittedly, too small for jets. A larger value like 10 for VFR and 15 for IFR would be much better. The VFR distance is used if you are landing at an airport with no ILS runways. The IFR distance is used if you are landing at an airport ***with*** ILS runways. *[MW✈]*

Take-Offs™


TOWER, THIS IS 32B, I'M NOT DICKING UD THE VOR, THERE'S RAIN & LIGHTNING, THE AILERONS ARE SHAKING, THERE'S TURBULENCE ALL OVER, I'M SCARED! I'm A STUDENT!
32B, THIS IS THE TOWER, YOU ARE CLEARED TO LAND ON ANY RUNWAY, OVER!
32B, I REPEAT, YOU ARE CLEARED TO LAND ON ANY RUNWAY OVER!
TOWER, THIS IS 32B, I CANT LAND! I CANT LAND BECAUSE I HAVEN'T TAKEN OFF YET!!

Reprinted with permission from Rod Machado's Instrument Pilot's Survival Manual ($29.95), ISBN 0-9631229-0-8. To order, telephone 800-437-7080 or send a fax to 714-498-2344.

Expanding Flight Shop's ATC Features

by Robert MacKay

The following is a collection of additional custom modules you can use to enhance the ATC features of Flight Shop. They can also be used as 'real' working examples of how to write adventures with the Flight Shop's APL programming language. Five other modules were covered in the prior issue, V3N6 of MW Magazine.

Why Don't The Modules Work?

As mentioned before, many of the modules from last time require the patched version of Flight Shop due out soon. All except the Altitude Change Request module can be adapted to work with the current version by remarking out patched version subroutines like PRINTALT. If you downloaded our copies of these modules from our Web site, you can also get some hints on what needs to be modified for the current FSFS version by examining the included README files.

Oops! The DE-ICER module had a spelling error in the code listing. In all the lines that start with "CLOUDS 1,...", replace the ending "DEICEFLAG" with "DEICER". This should amount to 9 replacements.

General Coding Guidelines

Coding in APL is very similar to coding in a generic flavor of the tried and true BASIC language. I won't go into teaching BASIC here, but I will point out in each of the routines to follow, any special commands or coding methods used. Hopefully, the samples shown here will awaken you to the possibilities provided by Flight Shop's ATC and will provide enough coding examples to get you going on your own ATC subroutines or full-blown, stand-alone adventures of similar of unique functionality. *The following code is copyright and may be reproduced for your own use, but may* ***not*** *be distributed by anyone other than the author, i.e., me.* Within a few weeks, I will be posting these subroutines onto the following networks - The MicroWINGS Web Page, CompuServe's FSFORUM, America On-line's FSRC, and the Microsoft Network's Flight Sim forum.

Ground Chatter Module

```
GROUNDATC:
    ;
    ;Copyright (c) 1996 by Robert M. MacKay
    ;All rights reserved
    ;
    ;MicroWINGS email: fltsim@microwings.com
    ;MicroWINGS web  : http://www.microwings.com
    ;

    IF RANDOM<(.1) AND L=0 THEN
        ;Choose airline name
        O=INT(RANDOM*9)
        ON O GOSUB GAL1, GAL2, GAL3, GAL4, GAL5, GAL6, GAL7, GAL8, GAL9
        ;Choose callsign number (1 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose callsign number (2 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose callsign number (3 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose instruction
        O=INT(RANDOM*5)
        ON O GOSUB GRDIN1, GRDIN2, GRDIN3, GRDIN4, GRDIN5
    ENDIF
    RETURN
GAL1:
    IF T=1 THEN
        SCROLL "American ",
    ENDIF
    IF V=1 THEN
        PLAY "FSAME.WAV"
    ENDIF
    RETURN
GAL2:
    IF T=1 THEN
        SCROLL "Delta ",
    ENDIF
    IF V=1 THEN
        PLAY "FSDEL.WAV"
    ENDIF
    RETURN
GAL3:
    IF T=1 THEN
        SCROLL "Lufthansa ",
    ENDIF
    IF V=1 THEN
        PLAY "FSLUF.WAV"
    ENDIF
    RETURN
GAL4:
    IF T=1 THEN
        SCROLL "United ",
    ENDIF
    IF V=1 THEN
        PLAY "FSUNI.WAV"
    ENDIF
    RETURN
GAL5:
    IF T=1 THEN
        SCROLL "TWA ",
    ENDIF
    IF V=1 THEN
        PLAY "FSTWA.WAV"
    ENDIF
    RETURN
GAL6:
    IF T=1 THEN
        SCROLL "US Air ",
    ENDIF
    IF V=1 THEN
        PLAY "FSUS_.WAV"
    ENDIF
    RETURN
GAL7:
    IF T=1 THEN
        SCROLL "Gulfstream ",
    ENDIF
    IF V=1 THEN
        PLAY "FSGUL.WAV"
    ENDIF
    RETURN
GAL8:
    IF T=1 THEN
        SCROLL "Learjet ",
    ENDIF
    IF V=1 THEN
        PLAY "FSLEA.WAV"
    ENDIF
    RETURN
GAL9:
    IF T=1 THEN
        SCROLL "Citation ",
    ENDIF
    IF V=1 THEN
        PLAY "FSCIT.WAV"
    ENDIF
    RETURN
GRDIN1:
    ;You're #x for takeoff
    vDigit=INT(RANDOM*6+1)
    IF T=1 THEN
        SCROLL ", You're number ",vDigit," for takeoff."
    ENDIF
    IF V=1 THEN
        PLAY "FSGRD140.WAV"
        GOSUB PLAYDIGIT
        PLAY "FSGRD141.WAV"
```

```
    ENDIF
    RETURN
GRDIN2:
    ;Hold short of the runway
    IF T=1 THEN
        SCROLL ", Hold short of the runway."
    ENDIF
    IF V=1 THEN
        PLAY "FSGRD142.WAV"
    ENDIF
    RETURN
GRDIN3:
    ;Cleared for taxi to the ramp
    IF T=1 THEN
        SCROLL ", Cleared for taxi to the ramp."
    ENDIF
    IF V=1 THEN
        PLAY "FSGRD143.WAV"
    ENDIF
    RETURN
GRDIN4:
    ;Hold short at the intersection
    IF T=1 THEN
        SCROLL ", Hold short at the intersection."
    ENDIF
    IF V=1 THEN
        PLAY "FSGRD144.WAV"
    ENDIF
    RETURN
GRDIN5:
    ;Contact Tower, Good Day
    IF T=1 THEN
        SCROLL ", Contact Tower, Good day."
    ENDIF
    IF V=1 THEN
        PLAY "FSGRD145.WAV"
    ENDIF
    RETURN
```

This code brings random chatter to the ground frequencies. Very much like the random chatter from Center when airborne, this module provides random chatter that you might typically hear on the ground like taxi instructions to other aircraft, etc. The only exception is the first instruction about what number a plane is for takeoff. This would really only be heard from Tower, but it was included here to also show how you can incorporate a random number in-between phrases.

This random chatter is unique in that you will not likely hear the same aircraft called out twice since the type of aircraft is random amongst a set number of choices, the callsign is randomly issued, and the instruction is randomly chosen against a set number of choices. This similar use of randomization against three components is also used in the Added ATC module described further along in this article. No longer will you begin to hear the same calls repeated during a flight, with these modules.

The list of aircraft called can be extended by simply adding more of the ALx: subroutines, and adding the subroutine labels (ALx) to the list in the ON GOSUB statement near the beginning. You can tailor 'how much' chatter you hear by adjusting the probability of a chatter coming through. This is the .1 (or 10%) in the very first IF statement of the code. To have more frequent chatter coming across, increase the .1 to a .2 or .3.

Added Center Chatter

```
MOREATC:
    ;
    ;Copyright (c) 1996 by Robert M. MacKay
    ;All rights reserved
    ;
    ;MicroWINGS email: fltsim@microwings.com
    ;MicroWINGS web  : http://www.microwings.com
    ;
    IF RANDOM<(.2) AND L=3 THEN
        ;Choose airline name
        O=INT(RANDOM*9)
        ON O GOSUB AL1, AL2, AL3, AL4, AL5, AL6, AL7, AL8, AL9
        ;Choose callsign number (1 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose callsign number (2 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose callsign number (3 of 3)
        vDigit=INT(RANDOM*9+1)
        IF T=1 THEN
            SCROLL vDigit,
        ENDIF
        IF V=1 THEN
            GOSUB PLAYDIGIT
        ENDIF
        ;Choose instruction (Climb, Descend, etc.)
        O=INT(RANDOM*2)
        ON O GOSUB ATCIN1, ATCIN2
    ENDIF
    RETURN
AL1:
    IF T=1 THEN
        SCROLL "American ",
    ENDIF
    IF V=1 THEN
        PLAY "FSAME.WAV"
    ENDIF
    RETURN
AL2:
    IF T=1 THEN
        SCROLL "Delta ",
    ENDIF
    IF V=1 THEN
        PLAY "FSDEL.WAV"
    ENDIF
    RETURN
AL3:
    IF T=1 THEN
        SCROLL "Lufthansa ",
    ENDIF
    IF V=1 THEN
        PLAY "FSLUF.WAV"
    ENDIF
    RETURN
AL4:
    IF T=1 THEN
        SCROLL "United ",
    ENDIF
    IF V=1 THEN
        PLAY "FSUNI.WAV"
    ENDIF
    RETURN
AL5:
    IF T=1 THEN
        SCROLL "TWA ",
    ENDIF
    IF V=1 THEN
        PLAY "FSTWA.WAV"
    ENDIF
    RETURN
AL6:
    IF T=1 THEN
        SCROLL "US Air ",
    ENDIF
    IF V=1 THEN
        PLAY "FSUS_.WAV"
    ENDIF
    RETURN
AL7:
    IF T=1 THEN
        SCROLL "Gulfstream ",
    ENDIF
    IF V=1 THEN
        PLAY "FSGUL.WAV"
    ENDIF
    RETURN
AL8:
    IF T=1 THEN
        SCROLL "Learjet ",
    ENDIF
    IF V=1 THEN
        PLAY "FSLEA.WAV"
    ENDIF
    RETURN
AL9:
    IF T=1 THEN
        SCROLL "Citation ",
    ENDIF
    IF V=1 THEN
        PLAY "FSCIT.WAV"
    ENDIF
    RETURN
ATCIN1:
    ;Climb and maintain...
    Y=FTOM(INT(RANDOM*29)*1000)+FTOM(7000)
    Y=INT(MTOF(Y/10)/10+.5)*10
```

Continued on page 38...

INTERVIEW: LAGO

by Hans Kiener

On my trip to Europe last spring, I had a chance to get together with Ugo Grandolini of LAGO Inc. for a quick interview. I'm sure some of you might recognize the name. Here is what Ugo Grandolini and his colleagues, Stefano Figoni of Simula and Umberto Colapicchioni of Virtuali, had to say:

***MW** - What is LAGO and when did it start as a software distributor?*

Ugo - LAGO was founded in late 1984 as a publisher of software in Italy. At that time there was a lot of piracy going on in this country. Many retailers bought one copy of a software product from us and made thousands of them on their own. Since I used to be a programmer myself, I realized how damaging this can be for the whole business, and decided not to go that route with LAGO. This of course paid of in the long run, by keeping a good reputation in this business.

***MW** - What role did flight simulation software play, and when did it start to become your main line of business?*

Ugo - We realized from the beginning, that flight simulation software has a big market out there. Since there were not a lot of products available at the time, it was easier to keep up with translations and product support. Because of this, we started concentrating on those products. We continued distributing some other software, but tried to exclusively distribute flight simulation products by the next year.

***MW** - In the United States mail order seems to command a large share of the market. How is this in Europe? Does LAGO still distribute to retailers?*

Ugo - We are basically a mail order company now. As I mentioned before, one of the main reasons for this is to prevent piracy. Another reason is the financial side of it. With mail order we do not have to give retailer discounts and we always get the money for the product in advance. The negative side is that, especially here in Italy, the people are not as used to this system or retailing as they are in the US. It is a big part of our work to convince them.

***MW** - Since I was lucky enough to get the whole Italian team together for this interview, I would like to find out more about how the cooperation of LAGO with Virtuali and Simula started. What was the reason for this close relation?*

Ugo - I was always interested to find somebody that would be able to create an Italian scenery for FS3. At the time, Umberto Colapicchioni was one of my clients, and made a proposal that he might be able do the job I was looking for. That is how Virtuali started. Virtuali is now a company of its own. For various practical reasons we decided to split the two companies, but of course still working close together. It is important in today's fast paced market to remain flexible and to have the ability to act quickly.

***MW** - Now, how and when did Simula get into the picture?*

Stefano - I began developing Scenery Italy for FS4 as soon as the Microsoft Aircraft and Scenery Designer became available. I did this on my own and released the resulting scenery as freeware. At that time I met Maurizio and my other partner Giovanni. Maurizio had a lot of knowledge about the structure of Microsoft Flight Simulator, and was therefore a perfect partner. He is actually responsible for the DC-9 for FS5. So, we founded Simula Flightware. Together we developed Scenery Italy for Flight Simulator 4 and 5. Soon after Lago became our publisher. We also started to work closer together with Virtuali, because for obvious reasons a bigger team of programmers accomplishes more. One of the products we worked on was a converter for FS4 adventures to work with FS5. This was a shareware product and had some limitations. For example, there were no voice files. We are also working on a modular cockpit system. Components could be used by themselves, or put together into a fully functioning cockpit.

***MW** - How did the ATP version of Scenery Italy evolve?*

Umberto - Since we did not have any support from subLOGIC on this, we had to find out ourselves how to make the scenery work with ATP. By now we solved all those difficulties and know how to get things to run in ATP. Scenery Italy is not a converted FS4 scenery, but actually developed from scratch.

***MW** - What can we expect form the Italian team in the near future?*

Ugo - At this time we can't say much more, but there will be a lot more to come. Keep an eye on Europe in general, since there are a lot of talents working together.

[MW✈]

...Continued from page 36

```
    IF T=1 THEN
        SCROLL ", Center, Climb and maintain ",
        GOSUB PRINTALT
        SCROLL ""
    ENDIF
    IF V=1 THEN
        PLAY "FSCTR.WAV"
        PLAY "FSCTR119.WAV"
        GOSUB PLAYALT
    ENDIF
    RETURN
ATCIN2:
    ;Descend and maintain...
    Y=FTOM(INT(RANDOM*29)*1000)+FTOM(7000)
    Y=INT(MTOF(Y/10)/10+.5)*10
    IF T=1 THEN
        SCROLL ", Center, Descend and maintain ",
        GOSUB PRINTALT
        SCROLL ""
    ENDIF
    IF V=1 THEN
        PLAY "FSCTR.WAV"
        PLAY "FSCTR108.WAV"
        GOSUB PLAYALT
    ENDIF
    RETURN
```

This module's code is identical to the code for the Ground ATC Chatter module. It only has two instructions for aircraft, but this could be added to. This simple code goes even further towards reducing the possibility of the same call getting repeated, by making the altitude the aircraft is being assigned to, random. Note that this module, does require the patched version of FSFS. However, by remarking out the GOSUB PRINTALT lines and increasing the value of Y by a factor of 10, it should work just fine with the current version.

The airlines called in this module are the same as those called in the Ground ATC module. You could combine both of these by changing the references in the Added ATC's "ON GOSUB" line from ALx to GALx, in effect, consolidating the airline calls (and reducing the amount of code by not duplicating all the airline calls).

You can tailor 'how much' chatter you hear by adjusting the probability of a chatter coming through. This is the .2 (or 20%) in the very first IF statement of the code. To have more frequent chatter coming across, increase the .2 to .3, or reduce the amount by reducing the .2 to .1.

Take-off Checklist

```
TAKEOFFCHKLST:
    ;
    ;Copyright (c) 1996 by Robert M. MacKay
    ;All rights reserved
    ;
    ;MicroWINGS email: fltsim@microwings.com
    ;MicroWINGS web  : http://www.microwings.com
    ;
    ADV_KEYS ADD, KV(CTRL "-")    ;Ctrl- (minus key)

    WAIT 0
    IF KEY=KV(CTRL "-") AND ON_GROUND THEN
        WAIT 0,KEYPRESS
        IF T=1 THEN
            SCROLL "Going through the checklist... Parking Brake?"
        ENDIF
        IF V=1 THEN
            PLAY "CHKLST01.WAV"
            PLAY "CHKLST02.WAV"
        ENDIF
TOCL2:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Instruments checked/set?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST03.WAV"
           ENDIF
           GOTO TOCL3
        ENDIF
        GOTO TOCL2
TOCL3:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Fuel Selector?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST04.WAV"
           ENDIF
           GOTO TOCL4
        ENDIF
        GOTO TOCL3
TOCL4:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Trim Tabs set as needed?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST05.WAV"
           ENDIF
           GOTO TOCL5
        ENDIF
        GOTO TOCL4
TOCL5:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Flaps set as needed?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST06.WAV"
           ENDIF
           GOTO TOCL6
        ENDIF
        GOTO TOCL5
TOCL6:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Flight Controls operating?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST07.WAV"
           ENDIF
           GOTO TOCL7
        ENDIF
        GOTO TOCL6
TOCL7:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Windows and Doors closed and locked?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST08.WAV"
           ENDIF
           GOTO TOCL8
        ENDIF
        GOTO TOCL7
TOCL8:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Transponder?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST09.WAV"
           ENDIF
           GOTO TOCL9
        ENDIF
        GOTO TOCL8
TOCL9:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Clock/Time off?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST10.WAV"
           ENDIF
           GOTO TOCL10
        ENDIF
        GOTO TOCL9
TOCL10:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Checklist complete!"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST11.WAV"
           ENDIF
           GOTO TOCL11
        ENDIF
```

```
        GOTO TOCL10
TOCL11:
    ENDIF
    RETURN
```

This module allows us to have a takeoff checklist read out to us (by a simulated co-pilot), and lets us acknowledge each checklist item, one at a time. Anytime you are on the ground at the departure airport, press Ctrl-- (Control and the minus key), and this will begin the checklist. After each item is read, press Ctrl-- again to roger back a "Check!". When the checklist is complete, the co-pilot will say "Checklist complete". You can run through the checklist as often as needed, by pressing Ctrl-- again. Additional items can be added to tailor these checklists to specific aircrafts and/or powerplants.

Landing Checklist

```
LANDINGCHKLST:
    ;
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    ;All rights reserved
    ;
    ;MicroWINGS email: fltsim@microwings.com
    ;MicroWINGS web  : http://www.microwings.com
    ;
    ADV_KEYS ADD, KV(CTRL "-")    ;Ctrl- (minus key)

    WAIT 0
    IF KEY=KV(CTRL "-") AND L>=4 THEN
        WAIT 0,KEYPRESS
        IF T=1 THEN
           SCROLL "Going through the checklist... Seats and Seat Belts?"
        ENDIF
        IF V=1 THEN
            PLAY "CHKLST01.WAV"
            PLAY "CHKLST12.WAV"
        ENDIF
LNDCL2:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Fuel Selector?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST04.WAV"
           ENDIF
           GOTO LNDCL3
        ENDIF
        GOTO LNDCL2
LNDCL3:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Auxiliary Fuel Pump?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST13.WAV"
           ENDIF
           GOTO LNDCL4
        ENDIF
        GOTO LNDCL3
LNDCL4:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Trim Tabs set as needed?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST05.WAV"
           ENDIF
           GOTO LNDCL5
        ENDIF
        GOTO LNDCL4
LNDCL5:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Flaps set as needed?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST06.WAV"
           ENDIF
           GOTO LNDCL6
        ENDIF
        GOTO LNDCL5
LNDCL6:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Undercarriage down and locked?"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST14.WAV"
           ENDIF
           GOTO LNDCL7
        ENDIF
        GOTO LNDCL6
LNDCL7:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF ENGINE_TYPE=0 THEN
               IF T=1 THEN
                   SCROLL "Carb Heat as needed?"
               ENDIF
               IF V=1 THEN
                   PLAY "CHKLST15.WAV"
               ENDIF
           ELSE
               IF T=1 THEN
                   SCROLL "Spoilers set as needed?"
               ENDIF
               IF V=1 THEN
                   PLAY "CHKLST16.WAV"
               ENDIF
           ENDIF
           GOTO LNDCL8
        ENDIF
        GOTO LNDCL7
LNDCL8:
        WAIT 0
        IF KEY=KV(CTRL "-") THEN
           WAIT 0, KEYPRESS
           IF T=1 THEN
               SCROLL "Checklist complete!"
           ENDIF
           IF V=1 THEN
               PLAY "CHKLST11.WAV"
           ENDIF
           GOTO LNDCL9
        ENDIF
        GOTO LNDCL8
LNDCL9:
    ENDIF
    RETURN
```

This module allows us to have a landing checklist read out to us (by a simulated co-pilot), and lets us acknowledge each checklist item, one at a time. Anytime you are tuned into Approach or the destination airport's Tower, press Ctrl-- (Control and the minus key), and this will begin the checklist. After each item is read, press Ctrl-- again to roger back a "Check!". When the checklist is complete, the co-pilot will say "Checklist complete". You can run through the checklist as often as needed, by pressing Ctrl-- again. This module checks the L variable to be sure we are on Approach (L=4) or Tower (L=5). Additional items can be added to tailor these checklists to specific aircrafts and/or powerplants.

Still, Even More To Come...

In future issues, I will be providing you with even more custom modules you can add to your ATC features. If you download the files I will be putting up from these articles, you will get the WAV files too. This way you do not have to record them yourself and they will have the same voice as Flight Shop's original ATC. Before I close for this issue, let me answer again the question that many of you may ask: *"The ATC Workshop UPLOAD command only allows us to specify up to three custom modules. How can we make flights with the features of more than just three custom modules?"* Actually, this is quite easy. Just copy all these modules into one file. Then, remove the RETURN statement from all the modules except the very last one in the file. An easy way to copy these files into one file is to use the following DOS command:

```
COPY tchklst.txt+lchklst.txt+grdatc.txt+moreatc.txt multi_cm.txt <ENTER>
```

This will copy four modules into one called multi_cm.txt. Edit this file and remove all the RETURN's except the very last one. *[MW✈]*

THE PILOT SHOP

Hot Download Files For Flight Sims
(pictures on next page)

PANWAV3.ZIP (Bytes: 253KB)

Author: David Cole
Location: CompuServe FSFORUM (Lib2)

This is version 3 of a windows utility that allows you to easily manage third party aircraft panels and engine sounds at the same time. It will also allow you to archive both the panel and sounds along with descriptions for your next FS5 session.

747AE1.ZIP (Bytes: 1,139KB), 747AE2.ZIP (Bytes: 837KB), 747AE3.ZIP (Bytes: 600KB)

Author: Klaus Neupert
Location: CompuServe FSFORUM (Lib5)

These 3 files together create a fantastic 747-400 sound adventure for FS5 and FSFS. The wav files included in the package are actual cockpit sounds from a 747-400. Sounds include; Cockpit sounds and voice warnings (i.e. pull up warning, stick shaker, spoiler, and flap noises), a virtual first officer who suggests flap settings, gear up, reads actual checklists, and calls out v1, vr, and v2. Other sounds also include altitude readouts for landings as well as authentic ATC traffic calls.

747-4PNL.ZIP (Bytes: 63KB)

Author: Doug Stracner
Location: CompuServe FSFORUM (Lib5)

This is a new 747-400 instrument panel for FS5.1. This panel is designed incredibly different from any other panel to date. Research on the authenticity of the panel was done by a real 747 captain along with Juan Cabeza. This file works very well in conjunction with the 747-400 adventures mentioned above.

NAV13.ZIP (Bytes: 262KB)

Author: Ted Wright
Location: ftp.iup.edu\flight-sim\uploads

NAV is yet another Microsoft Flight Simulator compatible scenery file (BGL) viewer, with the addition of a simple flight planner. NAV will show (and print) a map of all the navigational aids, runways, and airports in your scenery files. It will also let you measure distances between points, search the files for specific items, and create a simple flight plan showing NavAid frequencies and distances between reference points.

PNLMTC10.ZIP (Bytes: 107KB)

Author: Pino Finizio
Location: CompuServe FSFORUM (Lib5)

Here is another simple but yet effective windows based program that will take care of starting a particular plane with the third party panel of your choice.

VIP-DC3S.ZIP (Bytes: 94KB)

Author: Kenneth J. Kerr
Location: CompuServe FSFORUM (Lib5)

This is the DC-3 Dakota cockpit from the Visually Incredible Panel series. This particular version is an evaluation (Shareware) version that contains registration reminders on the panel minus a few missing features. The fully registered version can be obtained through CompuServe's SWREG forum under ID 8821 or by e-mailing to Kenneth directly at (CIS ID 75451,3645).

GPWS4001.ZIP (Bytes: 150KB)

Author: Juan Cabeza
Location: CompuServe FSFORUM (Lib5)

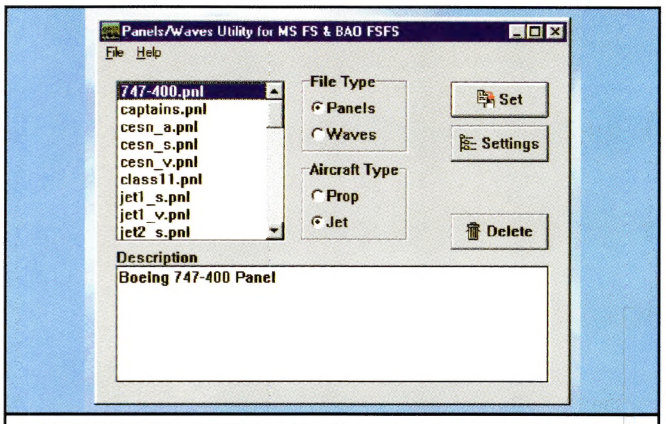
This file contains a Ground Proximity Warning System as well as an Aircraft Configuration Warning System for a 747-400. This file also includes the wav (Sound) files as they were actually recorded from a 747's cockpit.

T38EPRT.ZIP (Bytes: 71KB)

Author: Unknown
Location: ftp.iup.edu\flight-sim\uploads

This is a beautiful rendition of the Northrop T-38 Talon Trainer (FS5 and FSFS required). The Northrop T-38 Talon was developed out of design studies for the N-156F fighter design. The N-156F went on to become the F-5A Freedom Fighter. Flying for the first time on April 10, 1959, the T-38 was followed three months later by the N-156F.

About the author - Bill Higgins Jr. Is a member of the CompuServe FSFORUM Staff, and has been a Flight Sim enthusiast since FS3. He excels in Scenery Design and problem solving. Bill also holds a Private Pilot's License and is Instrument rated. He can be reached on CompuServe at ID 73177,3106. [MW✈]



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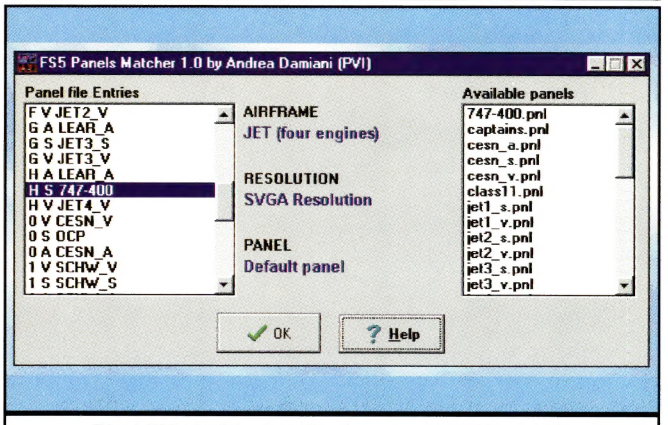

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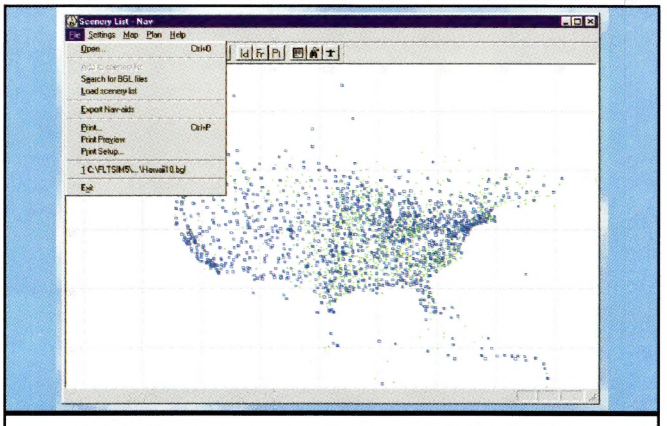
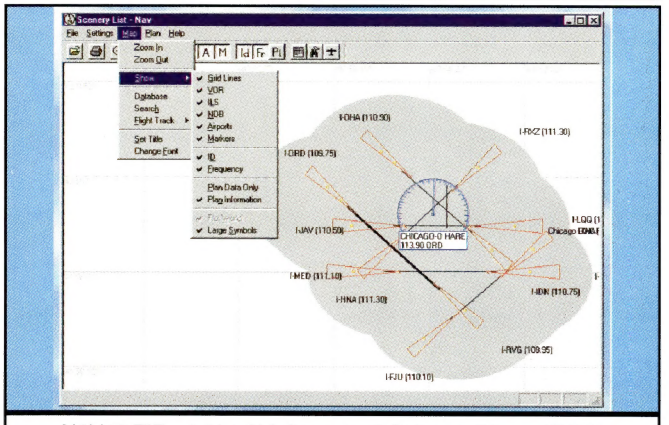
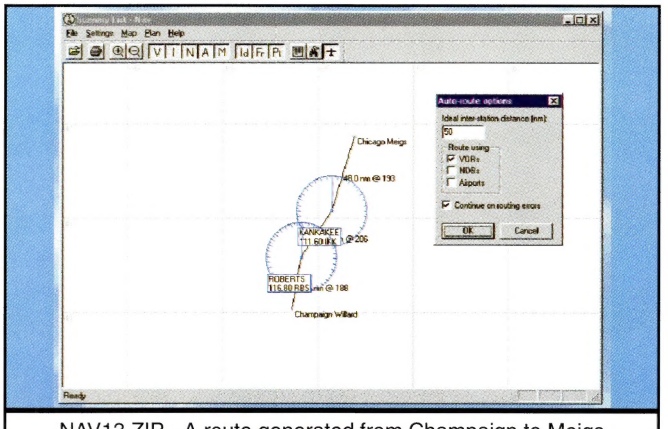


NAV13.ZIP - The view of all US area NavAids in FS5.1



NAV13.ZIP - A NavAid diagram of Chicago O'hare (ORD)



NAV13.ZIP - A route generated from Champaign to Meigs

T38EPRT.ZIP - Northrop's T-38 Talon Trainer

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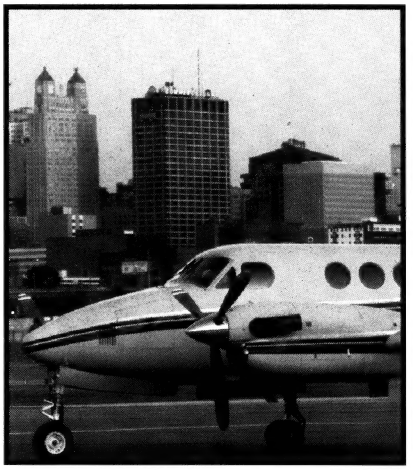

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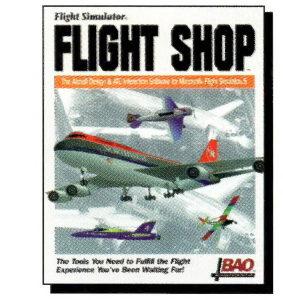

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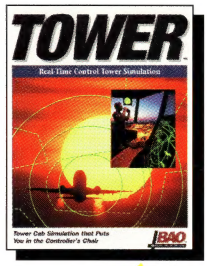

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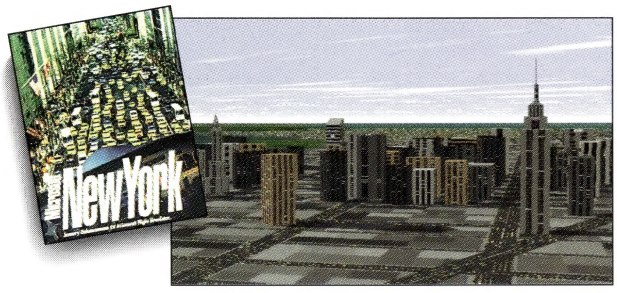

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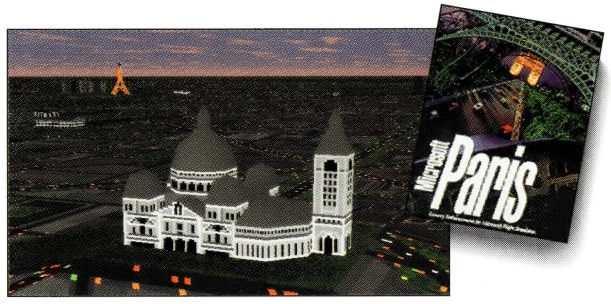
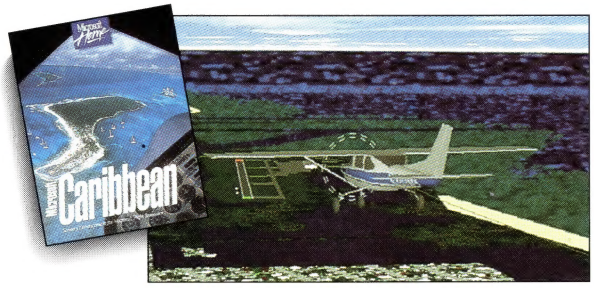
So exciting, you'll want to experience it from Broadway to the Battery!



Fly the City of Light by night.
So real, you'll almost feel the breeze off the Seine!



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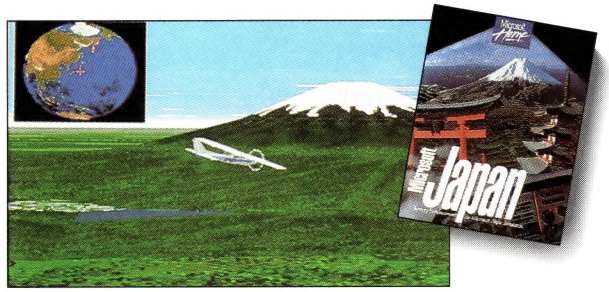

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